

Unpacking
and
Installation
Guide

hp StorageWorks ESL E-Series Tape Library

Second Edition (May 2004)

Part Number: 350800-002

This guide describes procedures for unpacking and installing the HP StorageWorks ESL E-Series tape library.



© 2004 Hewlett-Packard Development Company, L.P.

Hewlett-Packard Company makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of Hewlett-Packard. The information contained in this document is subject to change without notice.

Hewlett-Packard Company shall not be liable for technical or editorial errors or omissions contained herein. The information is provided "as is" without warranty of any kind and is subject to change without notice. The warranties for Hewlett-Packard Company products are set forth in the express limited warranty statements for such products. Nothing herein should be construed as constituting an additional warranty.

Printed in the U.S.A.

HP StorageWorks ESL E-Series Tape Library Unpacking and Installation Guide
Second Edition (May 2004)
Part Number: 350800-002

Contents

About this Guide	5
Overview	6
Intended audience	6
Related documentation	6
Conventions	7
Document conventions	7
Text symbols	7
Equipment symbols	8
Getting help	10
HP technical support	10
HP storage website	10
HP authorized reseller	10
1 Unpacking the Library	11
Selecting an installation location	12
Floor space	13
Floor clearance	14
Floor strength and inclination	14
Power and grounding	14
Environmental conditions	15
Preparing for the installation	16
Tools for installation	16
Taking ESD precautions	17
Unpacking the library	18
Receiving the library	18
Unpacking the library	18
Moving the library to the installation site	27
Setting up the library	28
Storing the packaging materials	40

2	Installing the Library	41
	Installing drive clusters	43
	Installing additional drive clusters	44
	Connecting drive cluster cables	47
	Installing tape drives	54
	Installing interface controllers	59
	Cabling the library	62
	Connecting the cabinet controller SCSI cable	62
	Connecting drive cables	63
	Connecting SCSI cable(s) to the Ultrium 460 or SDLT 230 drive	63
	Connecting FC cable(s) to the Ultrium 460-FC drive	69
	Connecting drive cluster Ethernet cable(s)	73
	Connecting FC cables for HBA	76
	Connecting the cabinet controller LAN cable	77
	Powering on the library	78
3	Loading Tape Cartridges	79
	Preparing tape cartridges	80
	Labeling tape cartridges	80
	Ultrium bar code labels	81
	SDLT bar code labels	83
	Media label identifiers	84
	Setting the write-protect switch	84
	Write-protecting Ultrium tape cartridges	85
	Write-protecting SDLT tape cartridges	86
	Library storage locations and slot numbering	87
	Model 712e	91
	Model 630e	92
4	Configuring the Library	93
	Configuring tape drives	94
	Configuring the IP address	96
	Installing and configuring Command View ESL	100
	Prerequisites	100
	Installing Command View ESL	101
	Starting Command View ESL	102
	Configuring Command View ESL	102
	Index	105

About this Guide

This unpacking and installation guide provides information to help you:

- Unpack the library.
- Install the library.
- Load tape cartridges.
- Configure the library.

“About this Guide” topics include:

- [Overview](#), page 6
- [Conventions](#), page 7
- [Getting help](#), page 10

Overview

This section covers the following topics:

- [Intended audience](#)
- [Related documentation](#)

Intended audience

This book is intended for use by authorized HP service personnel only.

Related documentation

In addition to this guide, HP provides corresponding information:

- *HP StorageWorks ESL E-Series Pre-Installation Site Survey*
- *HP StorageWorks ESL E-Series Tape Library User's Guide*
- *HP StorageWorks ESL E-Series Tape Library Service Manual*

Conventions

Conventions consist of the following:

- Document conventions
- Text symbols
- Equipment symbols

Document conventions

The document conventions included in [Table 1](#) apply in most cases.

Table 1: Document conventions

Element	Convention
Cross-reference links	Blue text: Figure 1
Key and field names, menu items, buttons, and dialog box titles	Bold
File names, application names, and text emphasis	<i>Italics</i>
User input, command and directory names, and system responses (output and messages)	Monospace font COMMAND NAMES are uppercase monospace font unless they are case sensitive
Variables	<monospace, italic font>
Website addresses	Blue, underlined sans serif font text: http://www.hp.com

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.



Caution: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

Note: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.



Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.



Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of personal injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.



Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our website: <http://www.hp.com>.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP website: <http://www.hp.com/support/>. From this website, select the country of origin.

Note: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP storage website

The HP website has the latest information on this product, as well as the latest drivers. Access storage at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this website, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518
- In Canada, call 1-800-263-5868
- Elsewhere, see the HP website for locations and telephone numbers: <http://www.hp.com>.

Unpacking the Library

1

This chapter describes the following sections:

- [Selecting an installation location](#), page 12
- [Preparing for the installation](#), page 16
- [Unpacking the library](#), page 18
- [Setting up the library](#), page 28
- [Storing the packaging materials](#), page 40



Caution: Only qualified HP field service engineers should unpack the HP StorageWorks ESL E-Series tape library.

Selecting an installation location

When choosing an installation site for the HP StorageWorks ESL E-Series tape library, consider the following requirements:

- [Floor space](#), page 13
- [Floor clearance](#), page 14
- [Floor strength and inclination](#), page 14
- [Power and grounding](#), page 14
- [Environmental conditions](#), page 15

Note: These requirements are also described in the *HP StorageWorks ESL E-Series Tape Library User's Guide*.

Floor space

Figure 1 shows the minimum floor space required by the library.

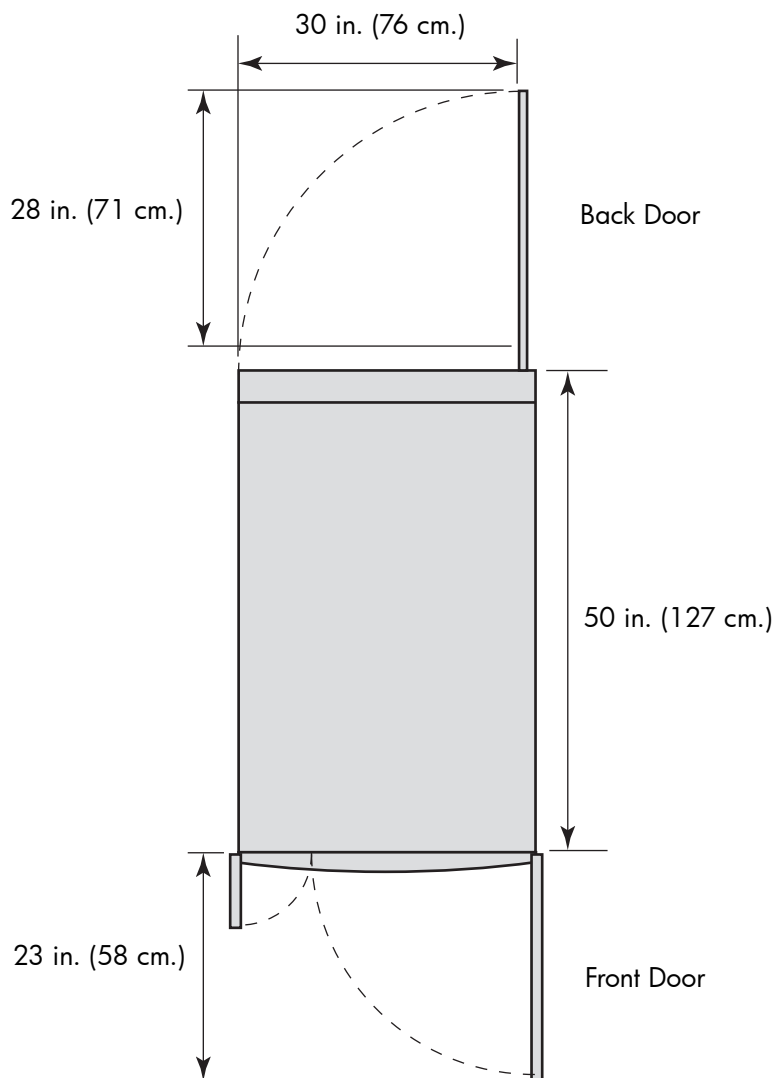


Figure 1: Floor space requirements

Floor clearance

The library has a floor clearance of 0.75 inch (19 mm). Place the library on a level, uncarpeted floor free of defects.

Floor strength and inclination

The floor at the installation site must be rated at 250 lb/ft² (1221 kg/m²). This is sufficient to support a fully loaded library.

The floor must be level to within 0.25 inch (6.4 mm) over a 6 ft by 6 ft (1.83 m by 1.83 m) area.

Power and grounding

For the United States and Canada, one or two UL/CSA-certified power cords are supplied with each library. Each power cord uses a 14/3 SJT cord, a L6-20P plug, and an IEC-C320 C19 female connector (see [Figure 2](#)).

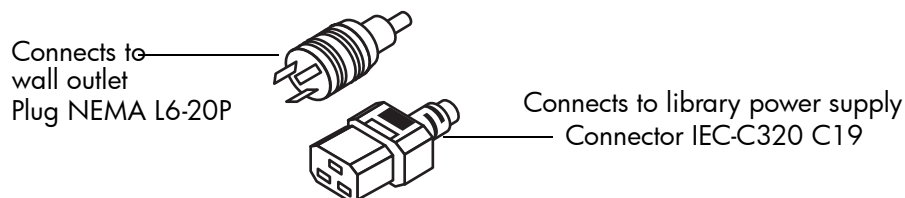


Figure 2: Power supply cord

The library is rated 200-240V~, 50-60Hz.

Power requirements may require modification of the facility's existing power capabilities by a qualified electrician. The required wall outlet for the United States and Canada is rated at 250VAC 16 amps (see [Figure 3](#)).

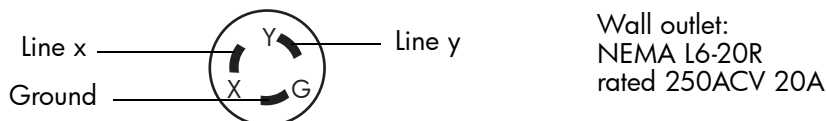


Figure 3: Wall outlet (NEMA L6-20R rated 250VAC 16 amps)

Two dedicated wall outlets and a 20-amp circuit breaker are required to provide power to the library. Outside of North America, replace the supplied power cord(s) with harmonized 3 x 1.5 mm² power cord(s) that meet local requirements, and install the appropriate wall outlet.



WARNING: This product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

Note: More information on the electrical requirements is provided in the *HP StorageWorks ESL E-Series Pre-Installation Site Survey*.



WARNING: To avoid damage to the library and risk to personal safety, the library must be connected to a grounded electrical outlet.

Environmental conditions

The installation site must have the following environmental conditions:

- Humidity: 20%-80% noncondensing
- Temperature: 15°C to 32°C (59°F to 90°F)
- Altitude: sea level to 10,000 feet

These environmental conditions apply when the library is in operation.

Note: For additional library specifications (including environmental requirements during shipping and storage), see the *HP StorageWorks ESL E-Series Tape Library User's Guide*.

Preparing for the installation

This section describes the preparations needed before installing the library:

- [Tools for installation](#), page 16
- [Taking ESD precautions](#), page 17

Tools for installation

These tools are needed for unpacking and setting up the library:

- #2 Phillips screwdriver
- Snips for metal bands
- Safety goggles
- Ratchet with 3/8-inch socket (or 3/8-inch open-end wrench)
- Ratchet with 3/4-inch socket (or 3/4-inch open-end wrench)
- Ratchet with 7/16-inch socket (or 7/16-inch open-end wrench)
- Carpenter's level

Note: A 12-inch socket extension is recommended for removing the counter-weight shipping restraint.

Taking ESD precautions



Caution: Some components within the library contain static-sensitive parts. To avoid damaging these parts while performing installation procedures, always observe the following precautions.

- Keep the library powered off during all installation procedures.
- Keep the library power cord plugged into a grounded power outlet, except when working with AC electrical components.
- Avoid contact with power supplies, EMI filters, and AC electrical components while the library is connected to a power outlet.
- Use an antistatic wrist strap.
- Keep static-sensitive parts in their original shipping containers until ready for installation.
- Do not place static-sensitive parts on a metal surface. Place them inside their protective shipping bag or on an antistatic mat.
- Avoid touching connectors and other components.

Note: Dry climates and cold-weather heating environments have lower relative humidity and are more likely to produce static electricity.

Unpacking the library

This section explains how to unpack the library and move it to its final installation location. The library is shipped in packing materials designed to protect it from damage during transit. By following these instructions, you help ensure that the library will continue to be safeguarded after it arrives at the installation site.

The unpacking procedures include the following:

- [Receiving the library](#), page 18
- [Unpacking the library](#), page 18
- [Moving the library to the installation site](#), page 27
- [Setting up the library](#), page 28
- [Storing the packaging materials](#), page 40

Receiving the library

Unpack the library as close to the installation site as possible. Inspect the shipping pallet and carton for damage that may have occurred during shipment. Report any damage to the shipper.



WARNING: Libraries weigh between 1,135 pounds (515 kg) and 1,459 pounds (662 kg), depending on their configuration. At least two people should move and install the library.

Unpacking the library

To unpack the library:

1. Note the side of the pallet where the library will be unloaded. The library may be unloaded from only the ramp side of the pallet (see [Figure 4](#) on page 19).

2. Verify the minimum floor space requirements (see [Figure 4](#)).

Note: [Figure 4](#) shows the minimum floor space required by the library at its unboxing site. Unboxing the library requires a minimum of 3 feet (91 cm) on all sides. The side used for the unloading ramp requires 10 feet (3.05 m). The minimum height required for unpacking the library is 85 inches (2.16 meters).

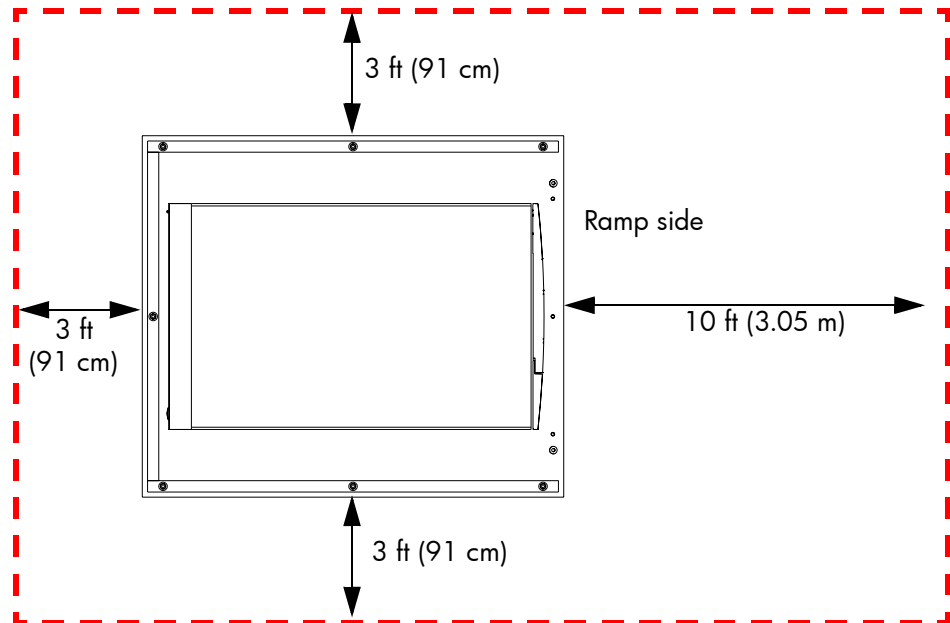


Figure 4: Minimum floor space requirements - unpacking site

3. Cut the two steel bands that secure the library and packing material to the pallet (see [Figure 5](#)).



WARNING: The steel bands are under tension and may snap away when cut. Wear safety goggles when cutting the steel bands.

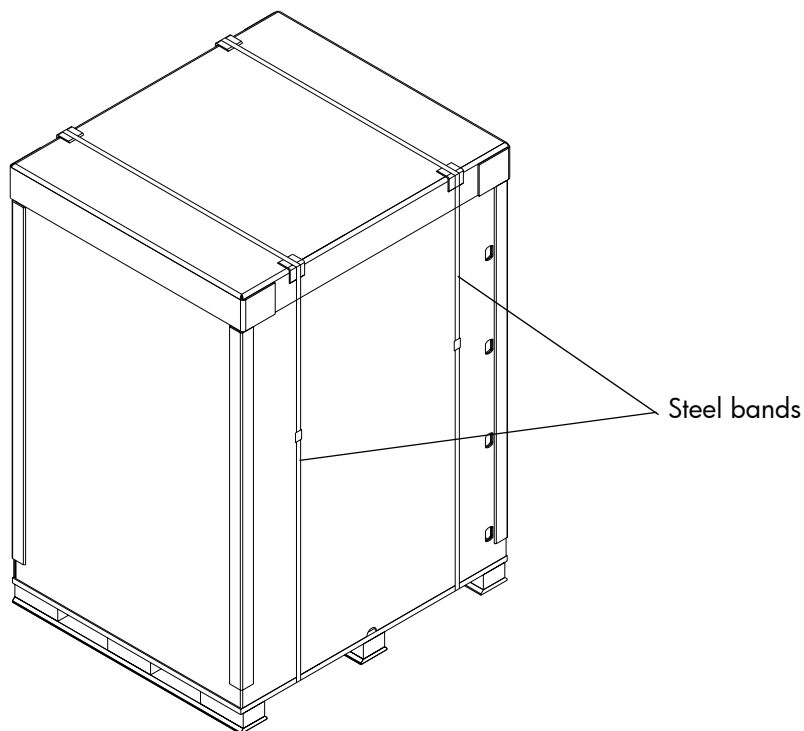


Figure 5: Removing the steel bands

4. Lift the cardboard box top cover straight up and remove it from the box (see [Figure 6](#)).

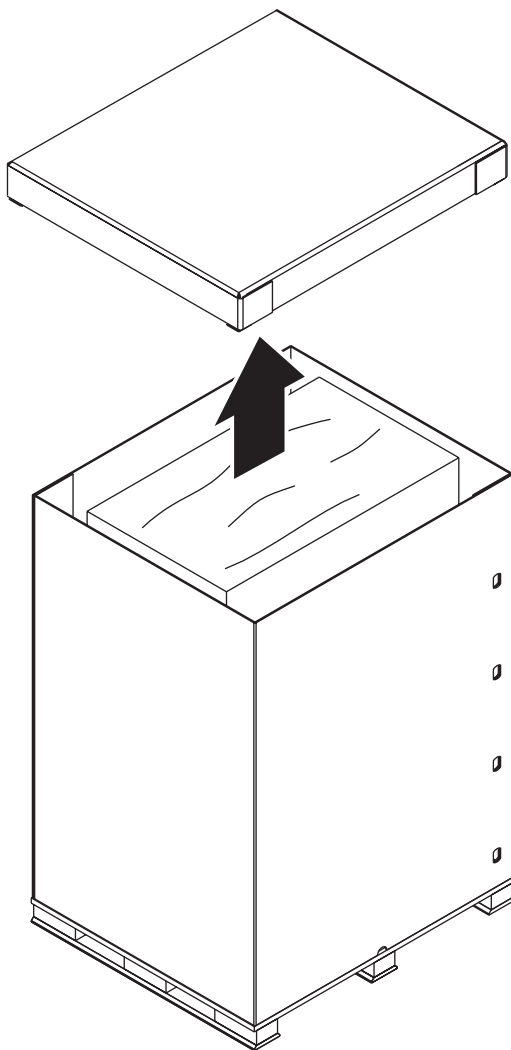


Figure 6: Removing the box top cover

5. Remove the eight cardboard box retaining clips and unwrap the cardboard box from around the library (see [Figure 7](#)).

Note: The cardboard box is in two sections.

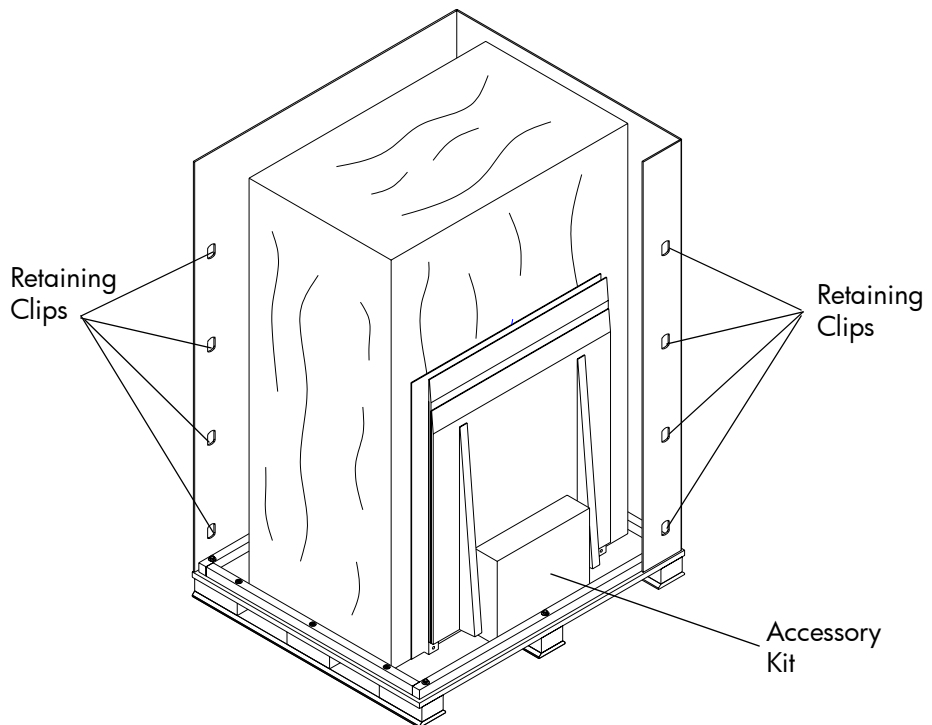


Figure 7: Removing the cardboard box

Note: Inspect the library for any damage that may have occurred during shipment. Pay special attention to areas behind any scuffs on the anti-static bag. If damage is detected, contact your authorized service representative.

6. Remove the accessory kit from in front of the pallet ramp (see [Figure 7](#)). Set it aside for later use at the installation site.
7. Remove the 3-3/8-inch hex head bolts, lock washers, and flat washers from the front rail of the pallet and set aside. Remove the front rail from the pallet (see [Figure 8](#)).

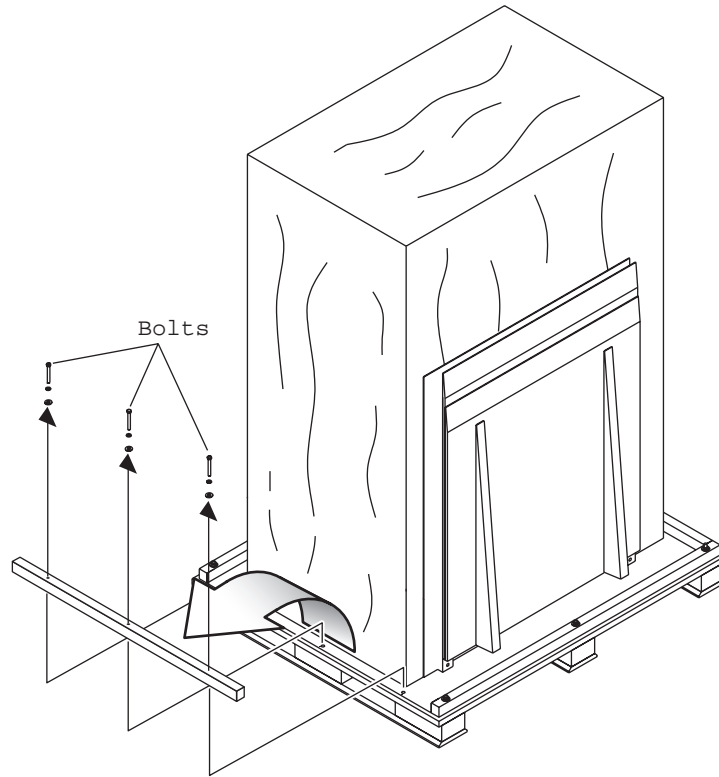


Figure 8: Removing the front pallet rail

8. Cut the tape securing the ramp against the library.

9. Use two of the 3-3/8-inch hex head bolts, lock washers, and flat washers removed in [step 7](#) to secure the ramp to the pallet (see [Figure 9](#)).

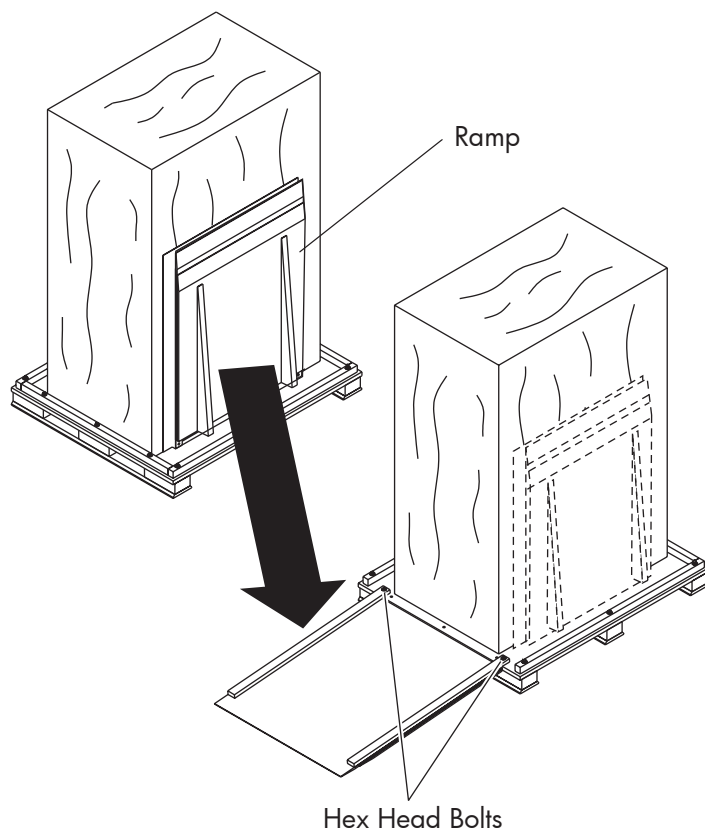


Figure 9: Attaching the pallet ramp

10. Remove the four 3/4-inch restraining bolts securing the library to the shipping pallet (see [Figure 10](#)). One restraining bolt is located near each leveling foot on the library.

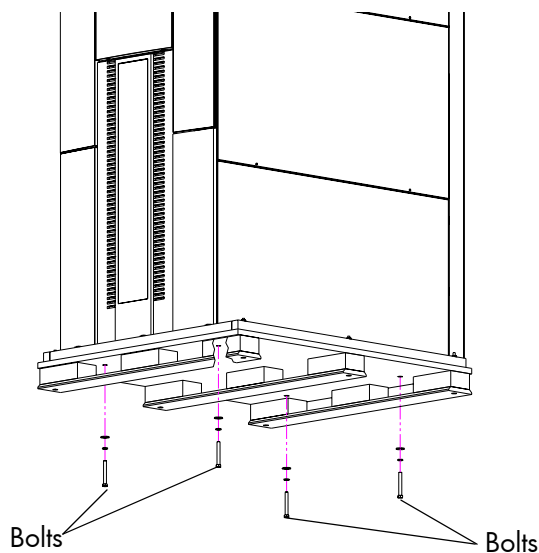


Figure 10: Removing the restraining bolts

11. Raise the leveling feet securing the library to the pallet (see [Figure 11](#)).

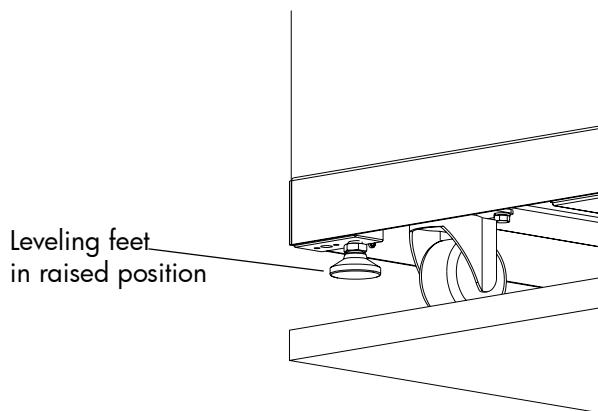


Figure 11: Raising the leveling feet

Moving the library to the installation site

1. Map a route to the installation site.
2. Carefully roll the library down the ramp and guide it to the installation site (see [Figure 12](#)).



WARNING: Libraries weigh between 1,135 pounds (515 kg) and 1,459 pounds (662 kg) depending on their configuration. At least two people should move and install the library.



Caution: Be aware that the laptop tray may open up during this process. If so, return it to the closed position before continuing.

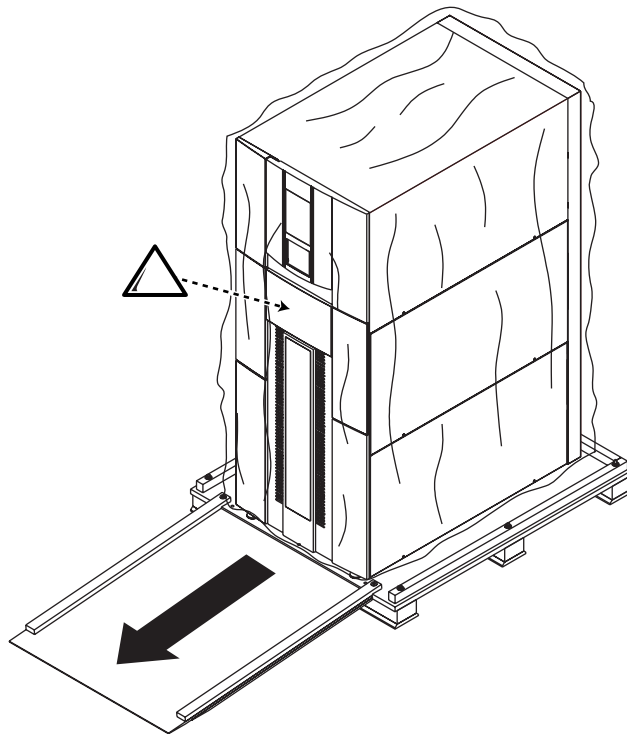


Figure 12: Rolling the library down the ramp

Setting up the library

1. Stabilize the library by lowering the leveling feet:
 - a. Rotate each foot of the library until it makes contact with the floor.
 - b. Rotate each foot an additional 1/4 turn to begin raising the library.
 - c. Level the library using a carpenter's level.
2. Remove the antistatic bag covering the library.
3. Remove the shipping foam from around the bottom perimeter of the library (see [Figure 13](#)).

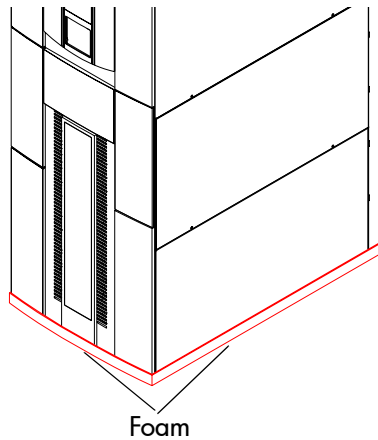


Figure 13: Removing the shipping foam from the library perimeter

4. Inspect the library for any damage that may have occurred during shipment.
5. Open the accessory kit.

Note: The accessory kit contents vary depending on the configuration ordered. If you believe a part is missing or is damaged, contact your HP sales representative.

6. Using the key from the accessories kit, unlock and open the library doors (right front and back):
 - a. Lift each door handle straight up and then turn the handle to unlatch each door.

The key lock for the front library door is located behind the laptop tray (see [Figure 14](#) on page 29). Open the laptop tray by gently pushing on the top of the tray to release it from the cabinet. Support the tray until it is fully opened.

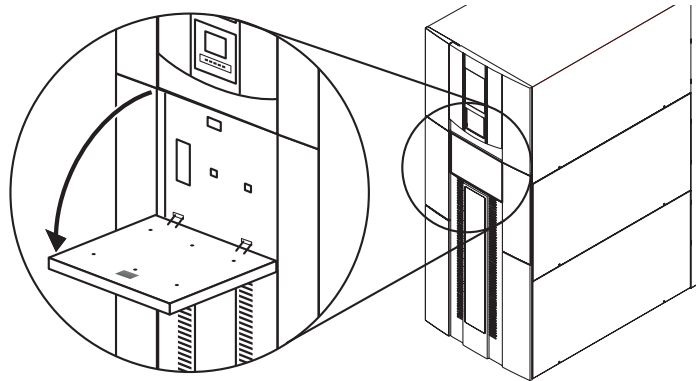


Figure 14: Opening the laptop tray

- b. Gently pull each door handle to open the door.

Note: The left front door latches to the library frame at the bottom of the door. Release this latch, then open the door.

7. From the front of the library, remove the foam from the Y-axis cover plate, from the left front door, and also from the back door frame (see [Figure 15](#)). Store the foam in case you need to relocate the library in the future.

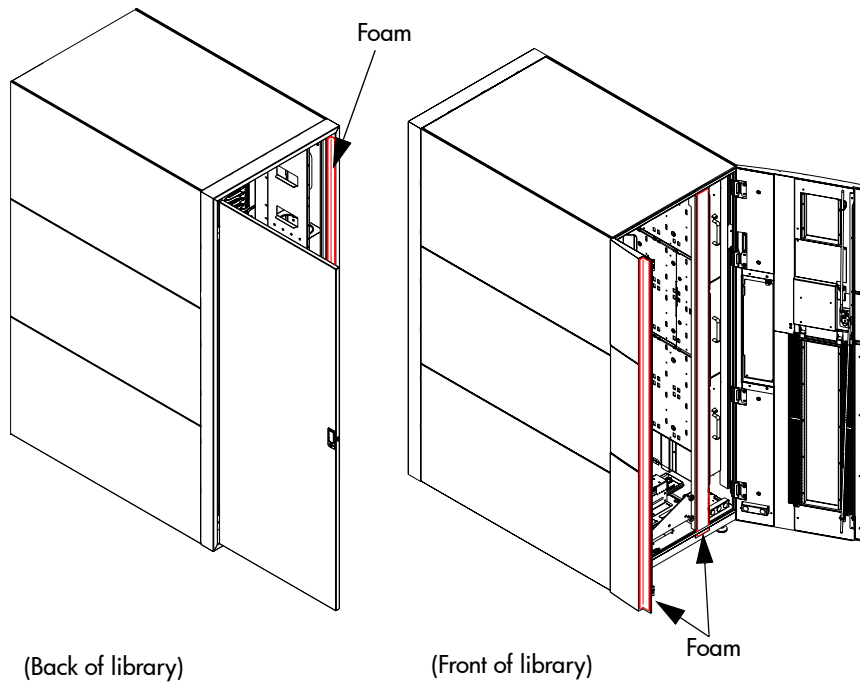


Figure 15: Removing the shipping foam

8. Remove the internal library frame restraint from the front of the library, but completing these steps (see [Figure 16](#)).
 - a. Remove the four 1/4-inch hex nuts securing the two pieces of the restraint.
 - b. Remove the 1/4-inch bolts securing the restraint to the top and bottom of the library frame.

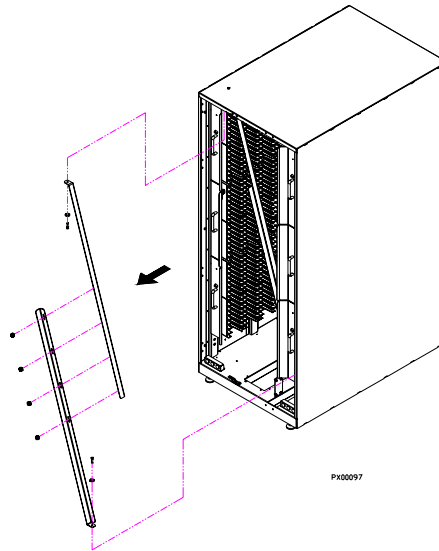


Figure 16: Remove the internal library frame restraint

9. From the front of the library, remove two shipping restraints using a #2 Phillips screwdriver (see [Figure 17](#)). The vertical axis shipping restraint is secured by four screws, and the robot shipping restraint is secured by seven screws.

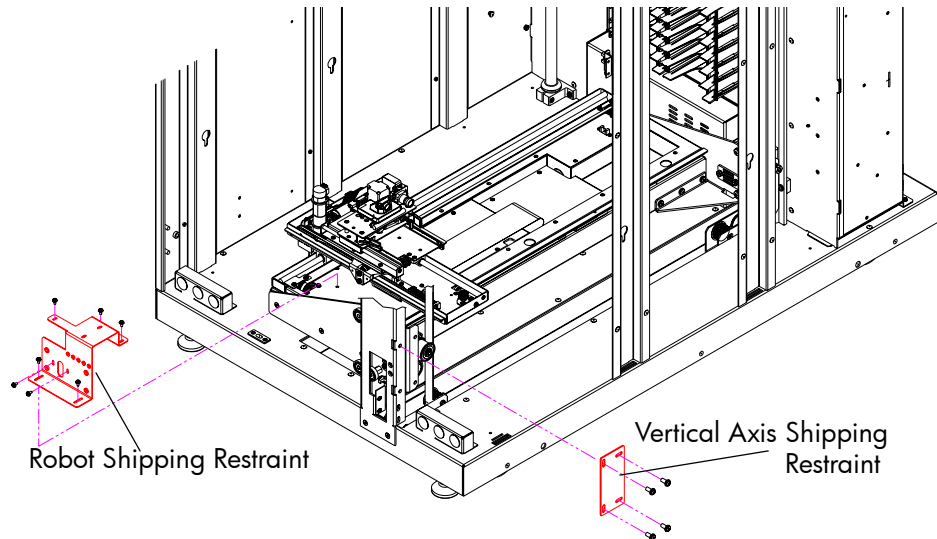


Figure 17: Removing the vertical axis and robot shipping restraints

10. Attach the vertical axis shipping restraint to the robot shipping restraint using the four screws removed from the vertical axis shipping restraint in [step 9](#) (see [Figure 18](#)).

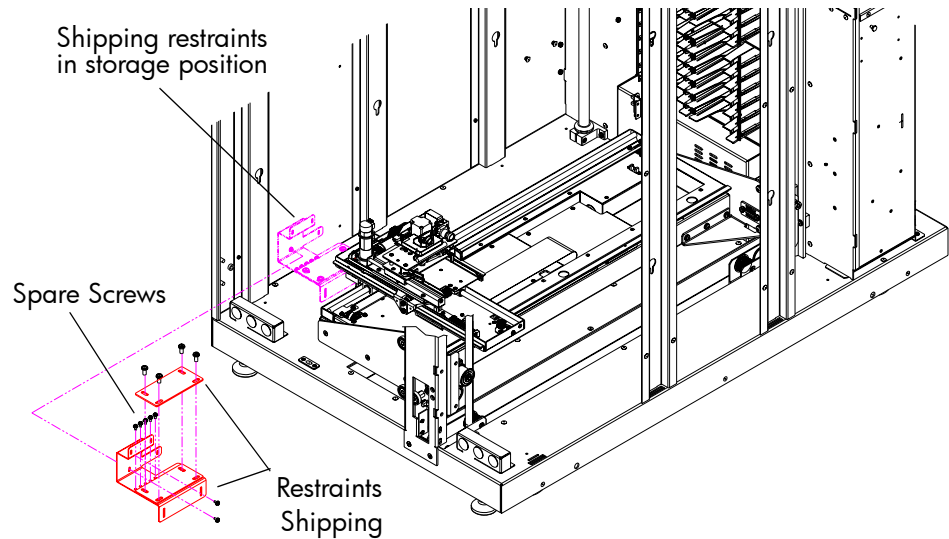


Figure 18: Storing the vertical axis and robot shipping restraints

11. Store the five spare screws in the robot shipping restraint as shown in [Figure 18](#).
12. Use the remaining two screws to secure the combined shipping restraints in the library, as shown in [Figure 18](#).

13. From the back of the library use a ratchet with a 7/16-inch socket or a 7/16-inch open-end wrench to remove the two nuts securing the counterweight shipping restraint to the back wall of the library cabinet (see [Figure 19](#)).

Note: HP recommends that you use a 12-inch socket extension.

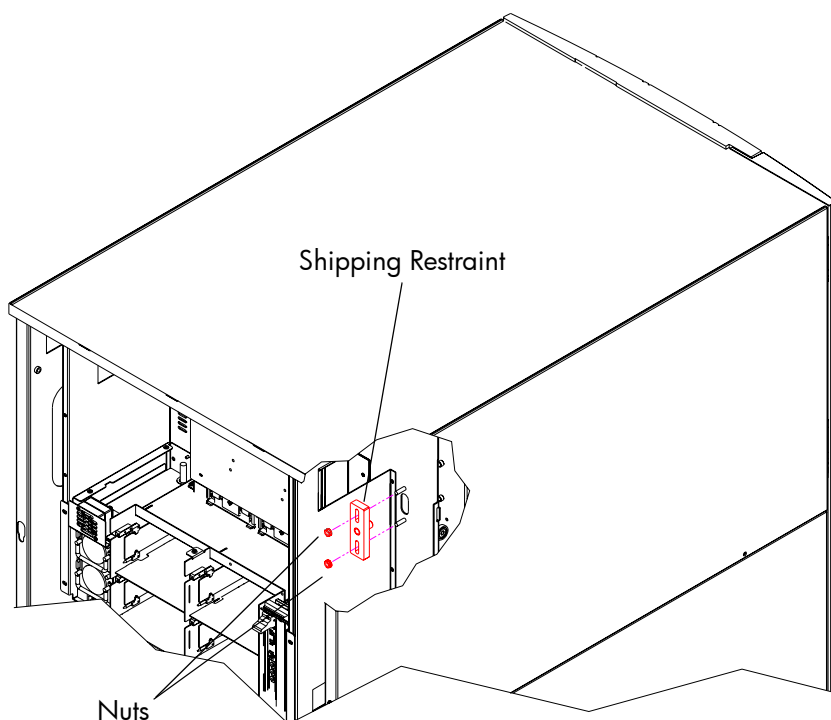


Figure 19: Removing the counterweight shipping restraint

14. Reverse the counterweight shipping restraint so that the pin is facing out. Reinstall it onto the back wall of the library using the two nuts removed in [step 13](#) (see [Figure 20](#)).

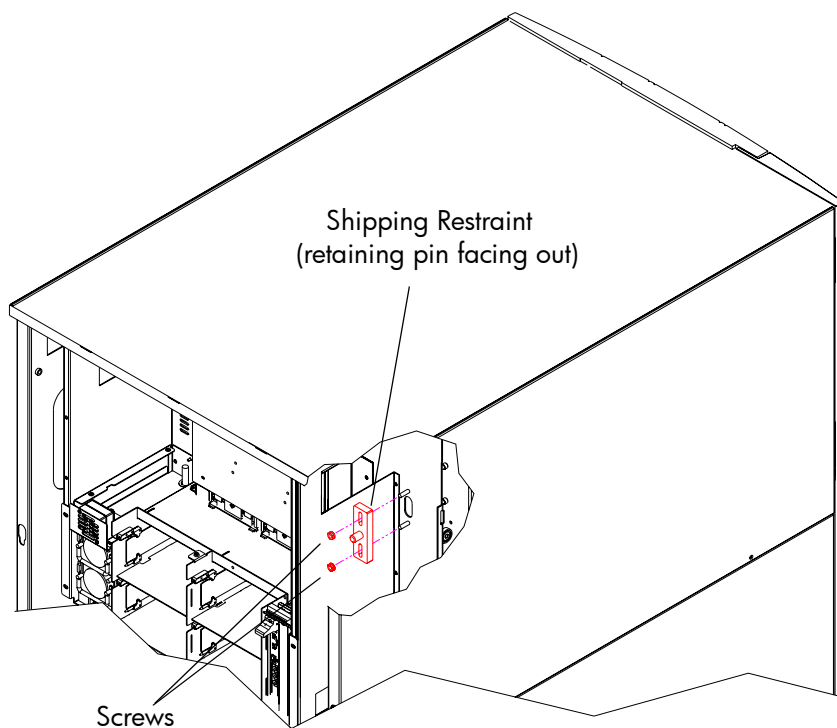


Figure 20: Storing the counter weight shipping restraint

15. Remove the six panel shipping restraints—three on each side of the cabinet.
 - a. Use a 1/4-in Phillips screwdriver to press on the bottom of the white load port latching mechanism to disengage it and release the load port (see [Figure 21](#))

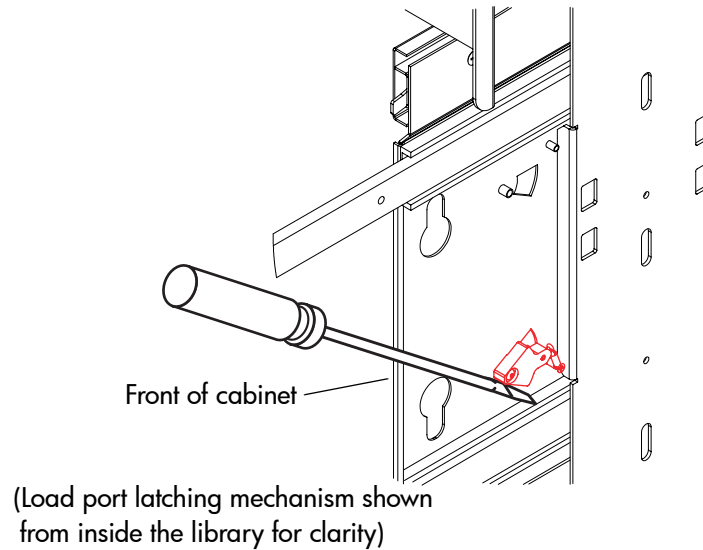
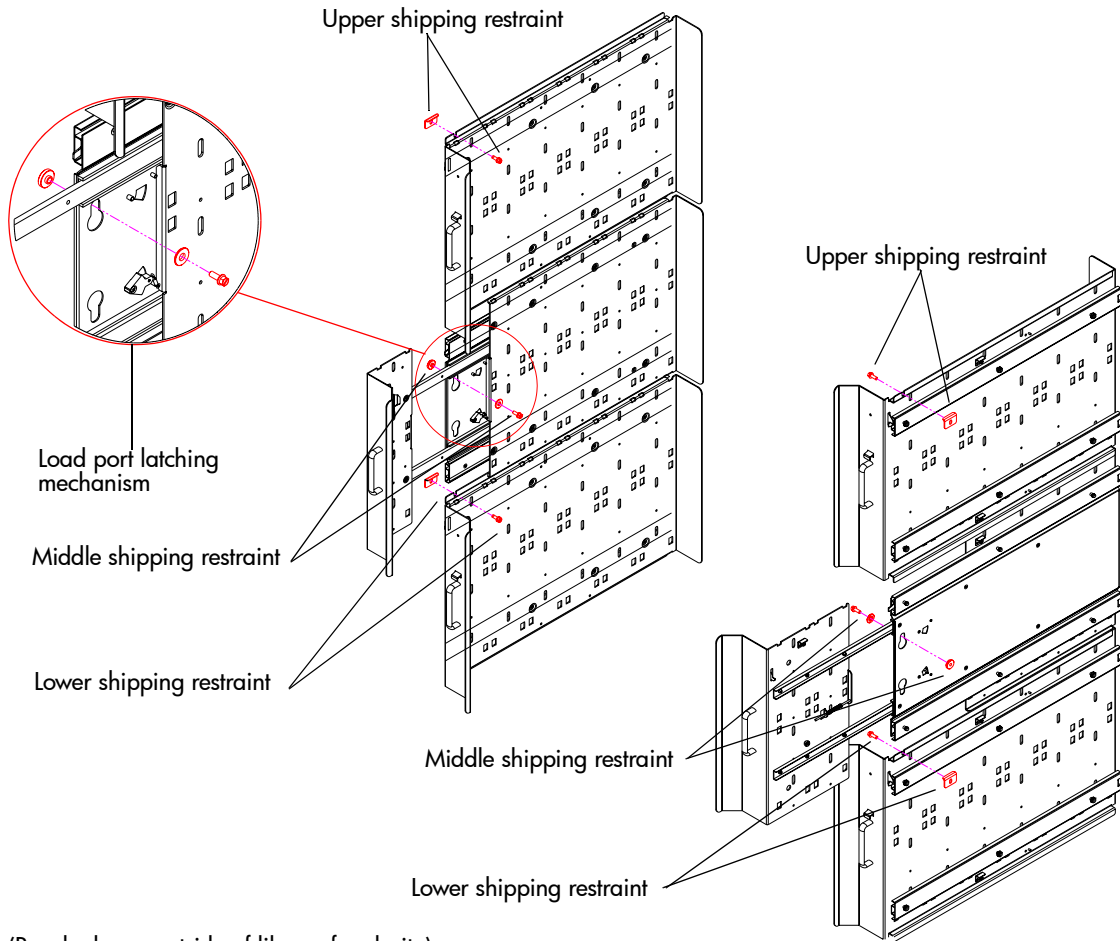


Figure 21: Disengaging the load port latching mechanism

- b. Pull out the load port to expose the middle and lower shipping restraints (see [Figure 22](#)).



(Panels shown outside of library for clarity)

Figure 22: Removing the panel shipping restraints

- c. Using a #2 Phillips screwdriver, remove the middle and lower panel shipping restraints.
- d. Close the load port.

- e. Locate the upper shipping restraint above the upper panel (see [Figure 22](#)) and remove it using a #2 Phillips screwdriver.
 - f. Repeat [step a](#) through [step e](#) for the panels on the other side of the library cabinet.
16. Store the panel shipping restraint hardware (three sets on each side) on the lower cabinet frame (see [Figure 23](#)).

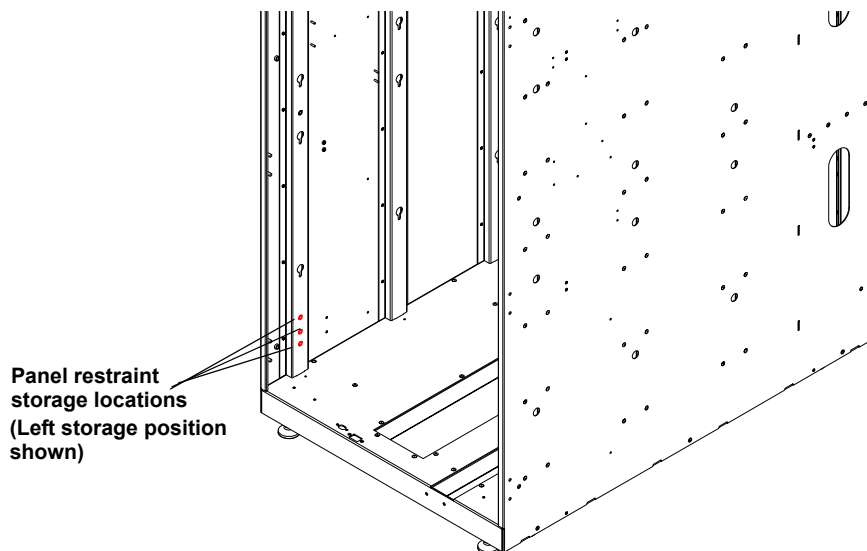


Figure 23: Storing the panel shipping restraints

17. Using the power cables from the accessory kit, connect the library to a grounded power source, using the following procedure.
- a. Connect the cables to the library's main power source.
 - b. Route the cables through the cable access hole at the bottom of the cabinet.
 - c. Connect the cables to a grounded power source.

Note: Do not power on the library. The two breaker switches on the power distribution unit should remain in the off position (to the left) until the library is fully installed.



WARNING: This product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

Storing the packaging materials

Store the library packaging materials:

1. Detach the ramp and place on top of the pallet.
2. Fold the shipping bag.
3. Place the shipping bag, foam cap, screws, and other packaging materials on the pallet.
4. Collapse the cardboard box.
5. Place the cardboard box on top of the packaging materials on the pallet.
6. Secure the packaging materials to the pallet and store for future use.

Installing the Library

2

This chapter describes the procedures necessary to get your library up and running. Ensure you have the following equipment and accessories available before installing the library.

Note: Kits ship with US standard power cables. Non-US power cables are not included.

- For a SCSI environment, you need the following:
 - One HP StorageWorks e2400-160 Interface Controller for every four tape drives
 - Two Fibre Channel (FC) cables, for the host/switches, for every e2400-160 interface controller (not included)
 - Four SCSI cables and one Ethernet cable for each e2400-160 Interface Controller
 - One FC cable for the e1200-160 robotics controller card (not included)
 - Power source (see “[Power and grounding](#)” on page 14 for power requirements)
- For a native FC environment, you need the following:
 - One HP StorageWorks e2400-FC 2G Interface Controller for every four tape drives
 - One cable bracket and clamp
 - Four FC drive cables and one Ethernet cable for each e2400-FC 2G Interface Controller
 - One FC cable for the e1200-160 robotics controller card (not included)

- Two FC cables for the host/switches (not included)
- Power source (see “[Power and grounding](#)” on page 14 for power requirements)

This chapter includes the following sections:

- [Installing drive clusters](#), page 43
- [Installing tape drives](#), page 54
- [Installing interface controllers](#), page 59
- [Cabling the library](#), page 62
- [Powering on the library](#), page 78

Note: Many of the figures in this chapter show a library with SCSI drives and e2400-160 interface controllers. Your library may look different and could include Ultrium 460-FC drives and e2400-FC 2G interface controllers. Where information is specific to the interface controller and drive types, figures are provided showing the appropriate hardware.

Installing drive clusters



Caution: Before continuing with the installation procedure, ensure the library is powered off and that the main switches on the power distribution unit are turned off (to the left).

The library may contain up to 24 drives in 6 drive clusters (see [Figure 24](#)). The library ships with one drive cluster already installed:

- If you need to install additional drive clusters, proceed to “[Installing additional drive clusters](#)” on page 44.
- If you do not require additional clusters to be installed, proceed to “[Connecting drive cluster cables](#)” on page 47.

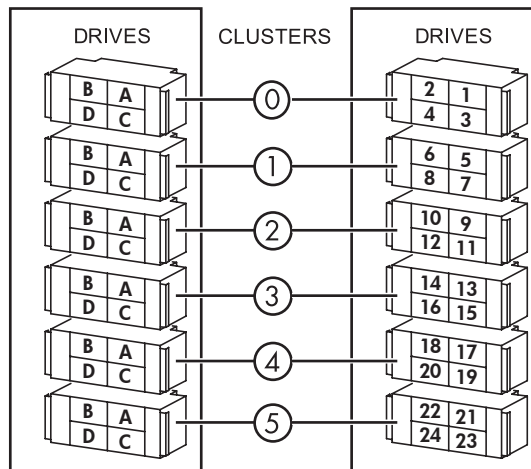


Figure 24: Drive cluster numbering

Installing additional drive clusters



Caution: Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure you are properly grounded when touching static-sensitive components.

1. Open the back door of the library to access drive cluster bays.
2. Before continuing with the installation procedure, ensure the library is powered off. Then ensure that the main switches on the power distribution unit are in the off (left) position (see [Figure 25](#)).

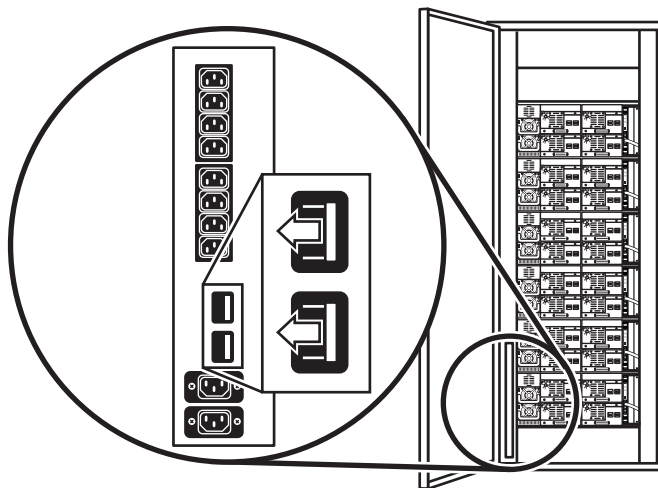


Figure 25: Ensure power distribution unit is switched off



Caution: Always use the power button on the front of the library to power off the library before switching off the power at the power distribution unit. Using the switches on the power distribution unit instead of the power button may corrupt the library memory.

Note: Drive clusters must be installed sequentially from top to bottom (clusters 0 through 5). There can be no gaps between drive clusters.

3. Using a 11/32-inch nut driver, remove the four nuts securing the cluster bin panel to the library (see [Figure 26](#)).

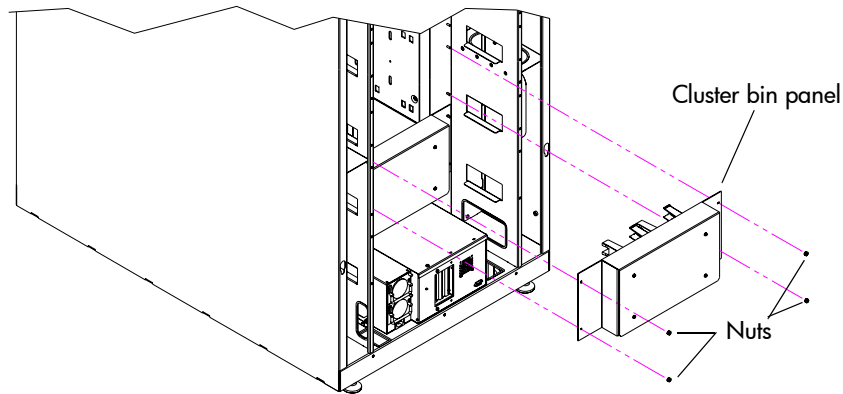


Figure 26: Removing a cluster bin panel

Note: Retain the cable clamps and ensure they remain attached to the drive clusters (see [Figure 27](#)). The clamps will be used for routing cables later in this procedure.

4. Align the drive cluster with the cabinet supports and insert it into the library.
5. Add the cable clamp on top of the lower right screw hole on the cluster.

- Secure the cluster to the library frame using four Phillips screws (see [Figure 27](#)).

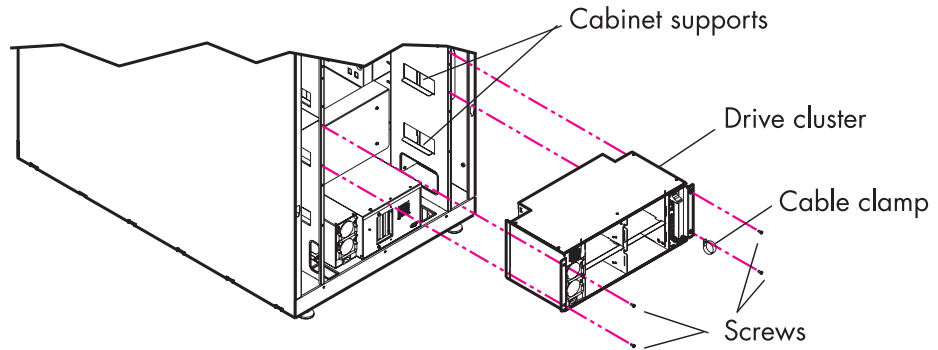


Figure 27: Installing the drive cluster

- Switch power to on for the drive cluster.



Caution: Do not power on the library at this time, just the individual drive cluster.

- Repeat [step 2](#) through [step 7](#) for each additional drive cluster to be installed.

Connecting drive cluster cables

To connect the drive cluster cables:

1. Connect a power cable on the front of the AC Failover box located on the lower left side of the library to the drive cluster power connector below the power supplies. Route the cable through the cable access hole (see [Figure 28](#)).

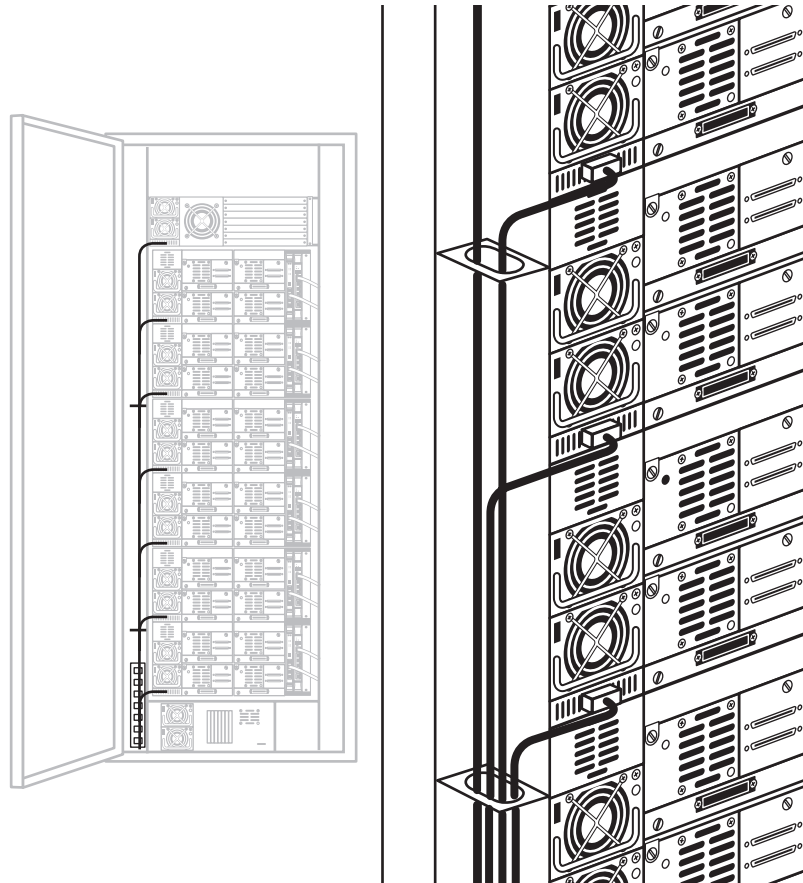


Figure 28: Connecting the cluster power cable

Note: Do not connect a cluster to the outlet on the top of the power distribution unit. This outlet is reserved for another purpose.

1. Connect the I²C communications cable located to the right of each drive cluster to the I²C connector on the cluster controller (see [Figure 29](#)).

Note: I²C cables are labeled “P0” through “P5” and correspond to the drive clusters. Ensure you use the appropriate cable for the drive cluster being installed (that is, cable “P1” for drive cluster “1”).

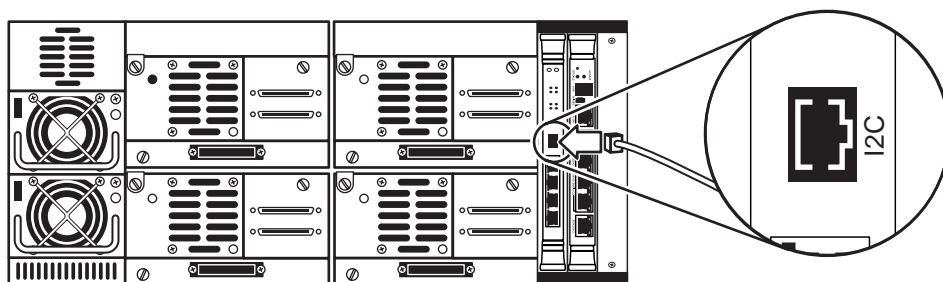
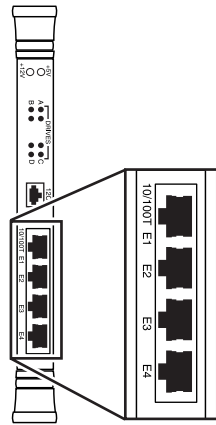


Figure 29: Connecting the I²C cable

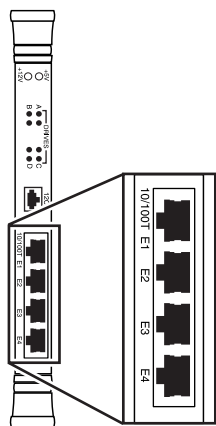
2. Review [Table 2](#) and [Table 3](#) before connecting the drive cluster Ethernet cables. How you connect these cables will depend on how many drive clusters are installed in the library. See the following tables for an overview.

If only one drive cluster is installed in the library, refer to [Table 2](#). If two or more drive clusters are installed, refer to [Table 3](#) on page 50.

Table 2: Single drive cluster



Drive Cluster	Cluster controller Ethernet port	Ethernet cable
0	E1	Cabinet controller
	E2	Interface Manager card
	E3	Interface controller (e2400-160 or e2400-FC 2G)
	E4	e1200-160 robotics controller

Table 3: Multiple drive clusters

Drive Cluster	Cluster controller Ethernet port	Ethernet cable
0	E1	Cabinet controller
	E2	Interface Manager card
	E3	Interface controller (e2400-160 or e2400-FC 2G)
	E4	Daisy-chain to lower cluster controller
1	E1	Daisy-chain to upper cluster controller
	E2	e1200-160 robotics controller
	E3	Interface controller (e2400-160 or e2400-FC 2G)
	E4	Daisy-chain to lower cluster controller
2 through 5	E1	Daisy-chain to upper cluster controller
	E2	Not used
	E3	Interface controller (e2400-160 or e2400-FC 2G)
	E4	Daisy-chain to lower controller (not used for cluster 5)

3. Connect the 7 ft (2.11 m) black Ethernet cable attached to the cabinet controller at the bottom of the library to Ethernet port “E1” on drive cluster 0 (see [Figure 30](#)). The cable is connected to the cabinet controller in the factory and should be hanging in the channel on the right side of the cabinet.

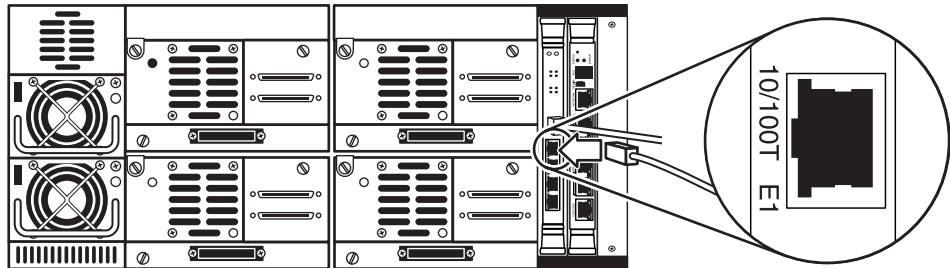


Figure 30: Connecting the cabinet controller Ethernet cable

4. Connect a 1 ft (30.3 cm) white Ethernet cable from the Ethernet port “Network” on the Interface Manager card to Ethernet port “E2” on the cluster controller next to the Interface Manager card (see [Figure 31](#)).

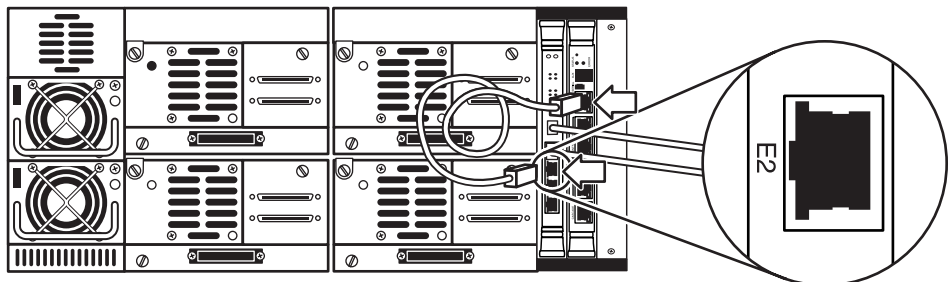


Figure 31: Connecting the Ethernet cable to the Interface Manager card

5. If more than one drive cluster is installed in the library:
 - a. Connect the 3 ft (91 cm) green Ethernet cable from Ethernet port “E2” on the cluster controller in drive cluster 1 to the Ethernet port on the robotics controller card (e1200-160) located in the bottom slot of the card cage at the top of the library cabinet (see [Figure 32](#)).
 - b. Proceed to [step 6](#).

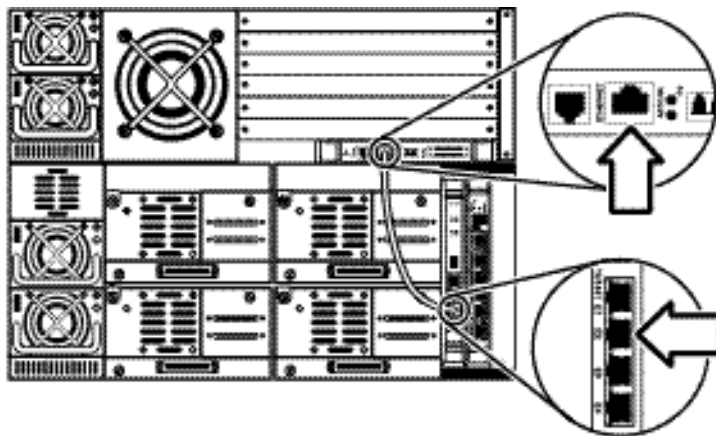


Figure 32: Connecting the Ethernet cable to the robotics controller card (e1200-160)

If only one drive cluster is installed in the library:

- a. Connect the 3 ft (91 cm) green Ethernet cable from Ethernet port “E4” on the cluster controller to the Ethernet port on the robotics controller card (e1200-160) located in the bottom slot of the card cage at the top of the library cabinet.
- b. Proceed to “[Installing tape drives](#)” on page 54.

6. If more than one drive cluster is installed in the library, add the 1 ft (30.3 cm) gray Ethernet cable from Ethernet port “E4” on the cluster controller in drive cluster 0 to Ethernet port “E1” on the cluster controller in drive cluster 1 (see [Figure 33](#)).

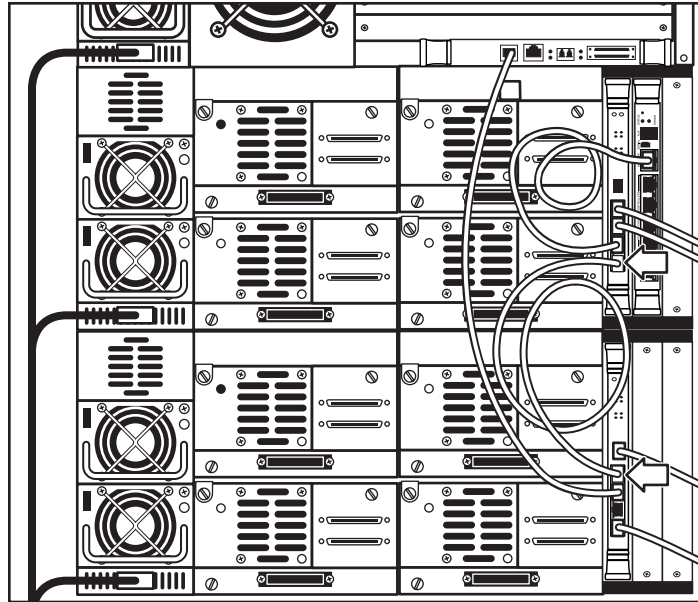


Figure 33: Daisy-chaining drive clusters

Continue daisy-chaining until you have done this procedure for all the drive clusters.

Note: When daisy-chaining the drive clusters, do so from Ethernet port “E4” on the top cluster to Ethernet port “E1” on the cluster below. This will help keep the cables clear from the other Ethernet cables on the cluster controller card.

Installing tape drives



Caution: Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure you are properly grounded when touching static-sensitive components.

Drive kits ship separately from the library. Depending on the configuration, you will have one to 24 drives to install.

A drawing showing the cluster numbering and drive positioning is located inside the back door (see [Figure 34](#)). Drive clusters are numbered starting at the top of the cabinet as follows: 0, 1, 2, 3, 4, 5. In each cluster the drives are lettered as follows: top right is A, top left is B, bottom right is C, bottom left is D.

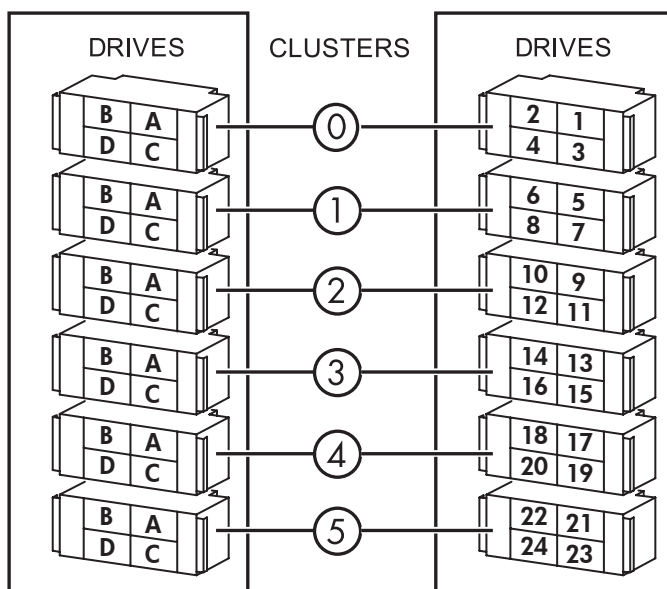


Figure 34: Cluster and drive numbering

1. Open the kits and inspect their contents for potential damage or missing parts.
2. Using a #2 Phillips screwdriver, remove the plate covering the back of the drive bay for each drive you need to install (see [Figure 35](#)).

Caution: Drive bays must be populated in sequential order beginning with drive bay A, then B, C, and finally D.

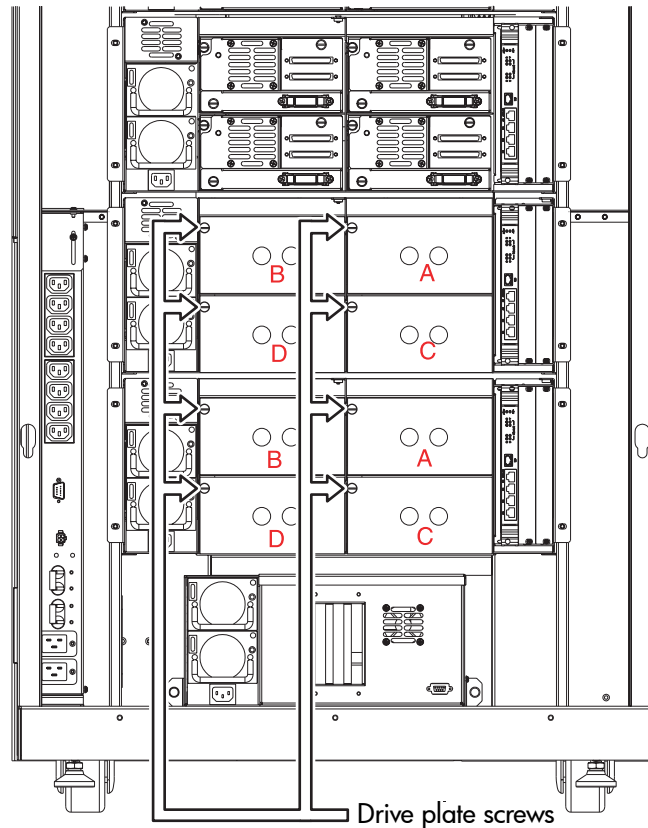


Figure 35: Preparing the drive bay

Note: HP recommends that you have only one drive type per cluster, and that you complete any partially-filled clusters before adding a new drive type to your library. Cabling and mapping will be easier and more efficient in this case. While combining Ultrium 460 and Ultrium 460-FC drives in a single cluster is supported, it requires the use of two interface controllers, and will result in unused interface controller ports. Combining SDLT and Ultrium drives in the same library is not yet supported.

If you choose to combine the two drive types, see the mixed interface technical document on the web for important information. Access the Technical documentation page from the ESL E-Series libraries link found on <http://www.hp.com/go/tape>.

3. Slide each tape drive into an open bay in the drive cluster (see [Figure 36](#)).



WARNING: Do not place your hand or arm into the open cluster channel. The library should be powered off for this procedure but if it is not, moving assemblies may be present.

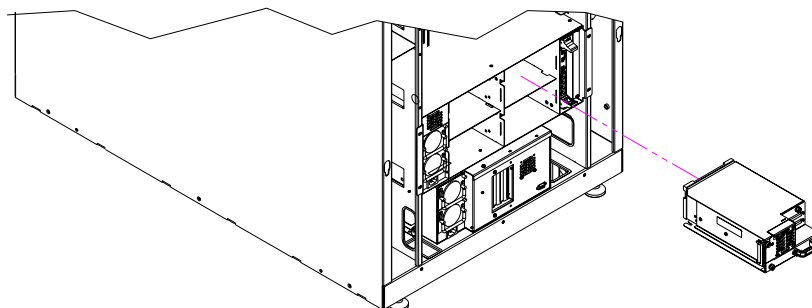


Figure 36: Installing a tape drive

4. Using a slotted screwdriver, secure the drive by tightening the captive screw in the upper left corner of each drive module (see [Figure 37](#)).

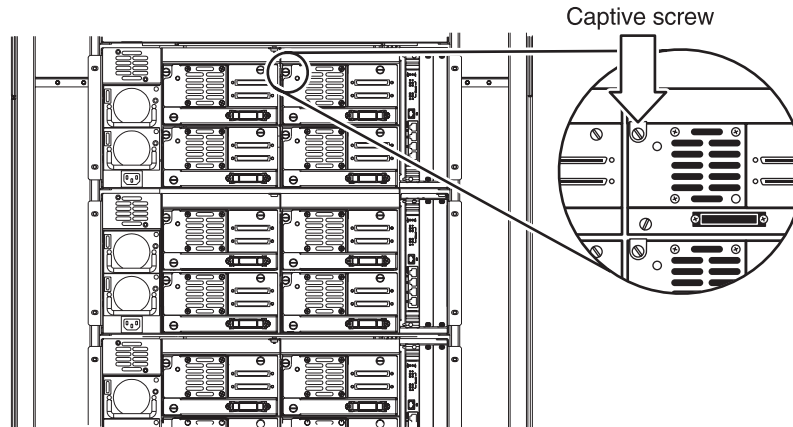


Figure 37: Tightening the captive screw

5. Attach a SCSI terminator (provided) to the top SCSI port on each Ultrium 460 or SDLT 230 drive (see [Figure 38](#)).

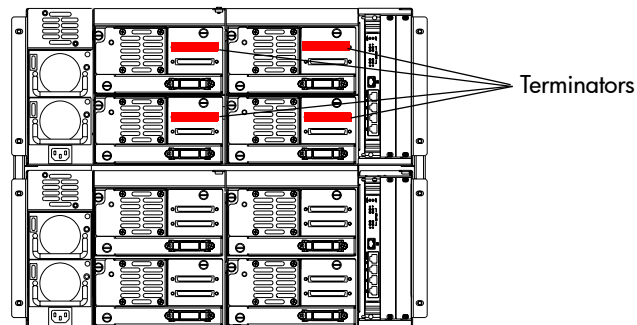


Figure 38: Attaching SCSI terminators to the Ultrium 460 or SDLT 230 drive

6. Verify that the end caps (supplied) are installed on FC Port B of the Ultrium 460-FC drive (see [Figure 39](#)).

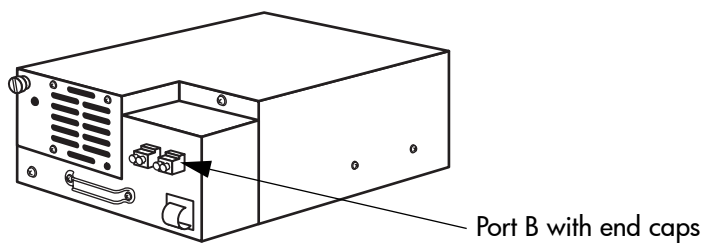


Figure 39: Verifying installation of FC end caps to the Ultrium 460-FC drive

Installing interface controllers



Caution: Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Make sure that you are properly grounded when touching static-sensitive components.

The HP StorageWorks e2400-160 and e2400-FC 2G interface controllers ship separately from the library. One interface controller is required per drive cluster, supporting up to four tape drives.

1. Open the kits and inspect for potential damage or missing parts.

Each e2400-160 ships with the following:

- Four SCSI cables
- One Ethernet cable
- Seven sets of two color-coded tie wraps

Each e2400-FC 2G ships with the following:

- Four FC cables, pre-bundled
- One Ethernet cable
- One FC card cage cable bracket with one cable clamp and two screws
- One tie wrap
- Labels

2. Identify the proper slot in the card cage for the e2400-160 or e2400-FC 2G interface controller(s) (see [Figure 40](#)).

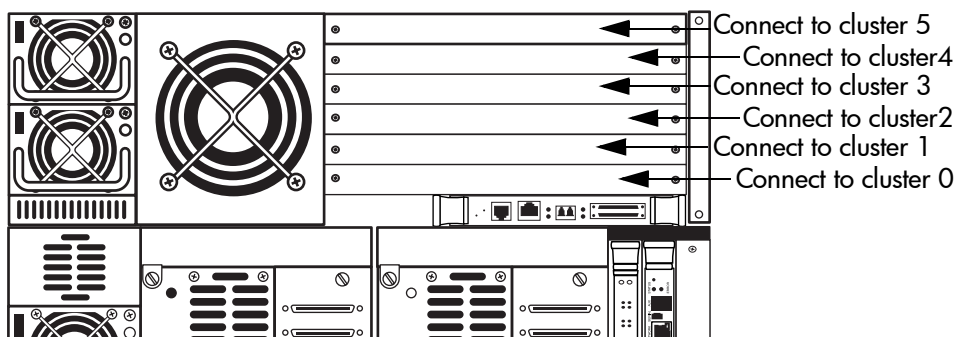


Figure 40: Identifying interface controller slots

Note: Install any e2400-160 interface controllers before installing e2400-FC 2G interface controllers. This ensures the FC cables remain on top of the SCSI cables so that the FC cables are not crushed or bent by the weight of the SCSI cables.

3. Using a small #2 Phillips screwdriver, remove a slot cover for each interface controller you need to install.
4. If you are installing only e2400-FC 2G interface controllers, skip to [step 6](#).
5. For an e2400-160 interface controller, follow these steps:
 - a. With the SCSI ports located to your right as you face the back of the library, slide the controller into the lowest available slot in the card cage until it is seated and the ejector latches lock in place.

- b. Tighten the captive screws using a #2 Phillips screwdriver (see [Figure 41](#)).

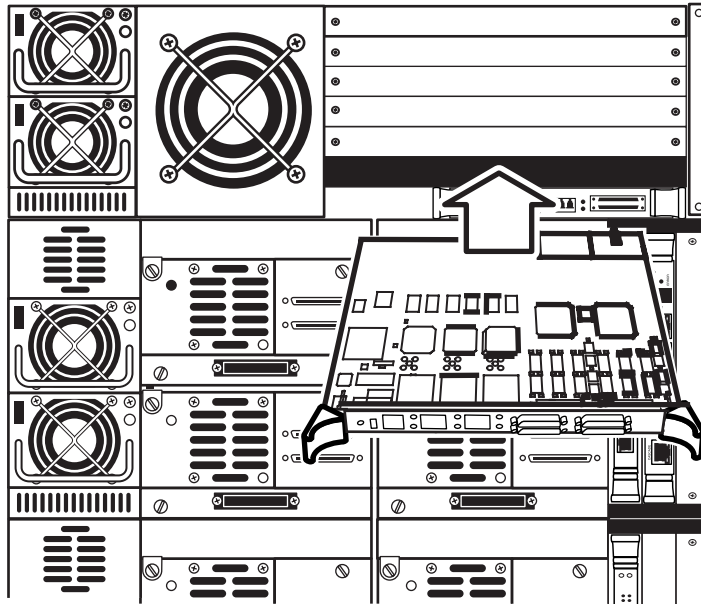


Figure 41: Installing the e2400-160 interface controller

6. For an e2400-FC 2G, follow these steps:
 - a. With the ports labeled TD# to your right as you face the back of the library, slide the controller into the lowest available slot in the card cage until it is seated and the ejector latches lock in place.
 - b. Using a #2 Phillips screwdriver, tighten the ejector handle screws.
7. Repeat [step 1](#) through [step 6](#) for each interface controller to be installed.

Note: The interface controller ships with cabling components which will be installed in the next section, "[Cabling the library](#)" on page 62.

Cabling the library

The following sections include procedures for cabling the library. These procedures will be slightly different for the e2400-160 interface controller and Ultrium 460 drives, and the e2400-FC 2G interface controller and Ultrium 460-FC drives. The instructions for cabling each type of library are presented below.

Connecting the cabinet controller SCSI cable

1. If not already installed, find the SCSI cable for the cabinet controller in the accessory kit.
2. Connect the SCSI cable to the cabinet controller located at the base of the library, and route it up through the cable access holes to the right of the drive clusters (see [Figure 42](#)).

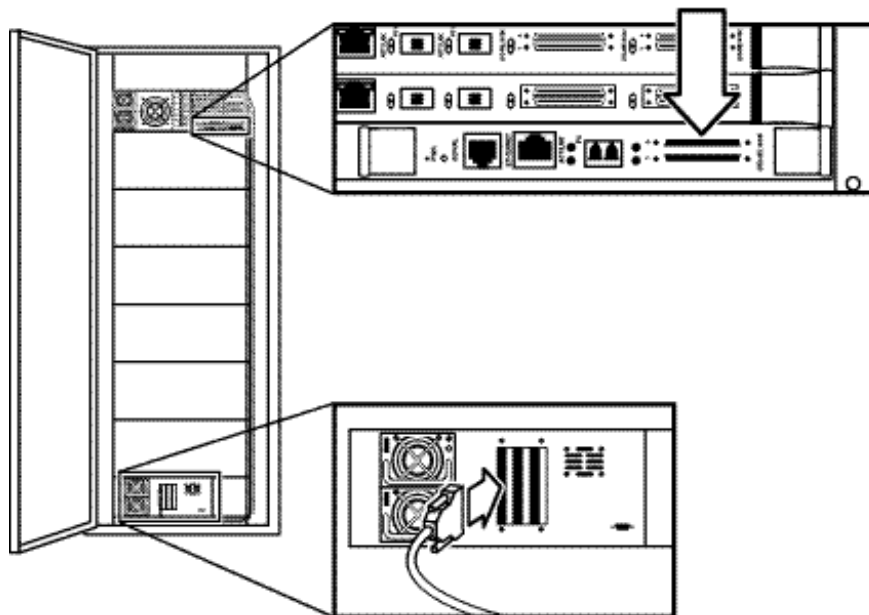


Figure 42: Connecting the robotics controller card (e1200-160)

3. Continue routing through the cluster cable clamp at the top right of the uppermost drive cluster.
4. Connect the other end to Port 0 of the robotics controller card (e1200-160), located in the card cage at the top of the library (see [Figure 42](#)).

Connecting drive cables

An e2400-160 interface controller connects to Ultrium 460 or SDLT 230 drives using SCSI cables. An e2400-FC 2G interface controller connects to Ultrium 460-FC drives using FC cables. For each controller card and drive type, follow the associated instructions, presented below to connect the drive cables.

Note: HP recommends that you have only one drive type per cluster, and that you complete any partially-filled clusters before adding a new drive type to your library. Cabling and mapping will be easier and more efficient in this case. While combining Ultrium 460 and Ultrium 460-FC drives in a single cluster is supported, it requires the use of two interface controllers, and will result in unused interface controller ports. Combining SDLT and Ultrium drives in the same library is not yet supported.

If you choose to combine the two drive types, see the mixed interface technical document on the web for important information. Access the Technical documentation page from the ESL E-Series libraries link found on <http://www.hp.com/go/tape>.

Connecting SCSI cable(s) to the Ultrium 460 or SDLT 230 drive

Note: Each e2400-160 interface controller card ships with four SCSI cables, one Ethernet cable, and seven sets of color coded tie wraps. *FC cables are not provided.* These parts will be needed for the following procedures.

Note: A step stool may be needed to reach the e2400-160 interface controllers in the card cage located at the top of the library cabinet.

1. Remove the top screw from the cable restraint bracket and loosen the bottom one to prepare for cable routing (see [Figure 43](#)).

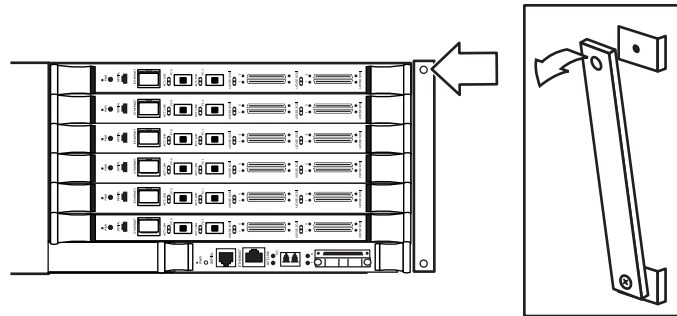


Figure 43: Preparing the cable restraint bracket

1. Connect the SCSI cables from the drives in drive cluster 0 to the e2400-160 interface controller in slot 0 of the card cage (see [Figure 44](#)).

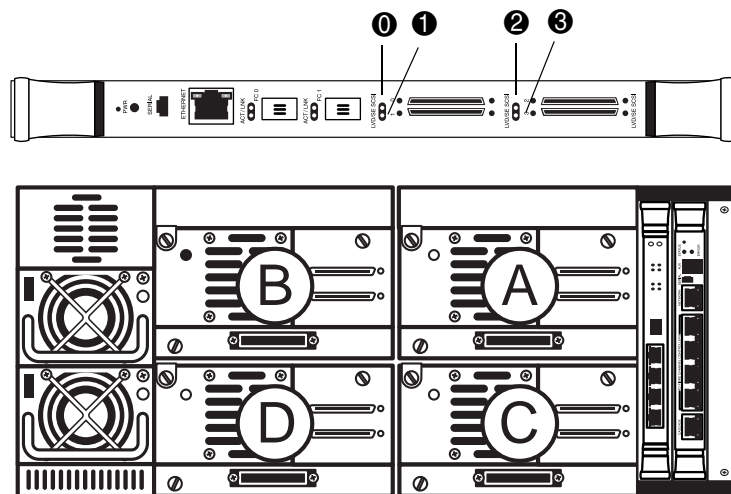


Figure 44: Matching drives and interface controller ports

Note: Drive SCSI cables are labeled "A", "B", "C", and "D" on the drive end to indicate the drive location. Drive SCSI cables are labeled "0", "1", "2", and "3" on the interface controller end to indicate the SCSI port location. The most efficient order for making these connections is as follows:

1. Connect a SCSI cable from drive D to port 3 on the interface controller.
 2. Connect a SCSI cable from drive B to port 1 on the interface controller.
 3. Connect a SCSI cable from drive C to port 2 on the interface controller.
 4. Connect a SCSI cable from drive A to port 0 on the interface controller.
-

- a. Gently tighten the screws to secure the cable to the drive port using a slotted screwdriver.
-

Caution: Do not overtighten the screws that secure the cable to the drive port.

- b. Route it through the cable access holes in the sheet metal on the right of the library cabinet.

For drive clusters 0 through 2, dip the excess cable length down into the upper cable access hole. For drive clusters 3 through 5, route the cables up through the lower and upper access holes. Push the first set of cables to

the back of the library to create space for additional cables. This will help prevent the cables from becoming tangled. See [Figure 45](#).

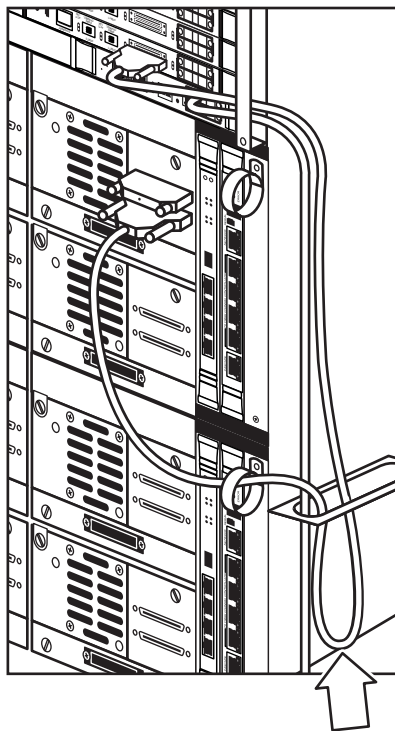


Figure 45: Managing drive SCSI cables

Caution: When routing cables through the cable access holes, be careful not to dislodge or damage the I²C cable attached to the cluster controller card.

- c. Continue routing the cable up through the cable restraint bracket located to the right of the card cage and attach the cable to the corresponding SCSI port on the e2400-160 interface controller.

Note: Tighten the SCSI connector screw on the left and then the right for easier installation due to cable interference. Pull the cable toward you to provide more clearance when tightening the right connector screw.

- d. Repeat [step 1](#) until all drives are connected.
- e. If you have a partially filled cluster, route the SCSI cables for the drives that are not present in preparation for adding them in the future.

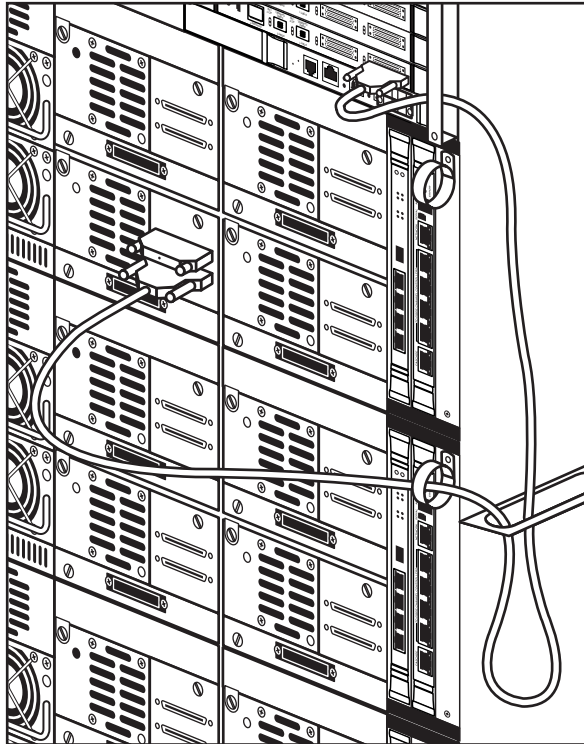


Figure 46: Attaching SCSI cables

5. The e2400-160 interface controller ships with several sets of tie wraps. Each color set should be used to designate a different drive cluster (see [Figure 47](#)).

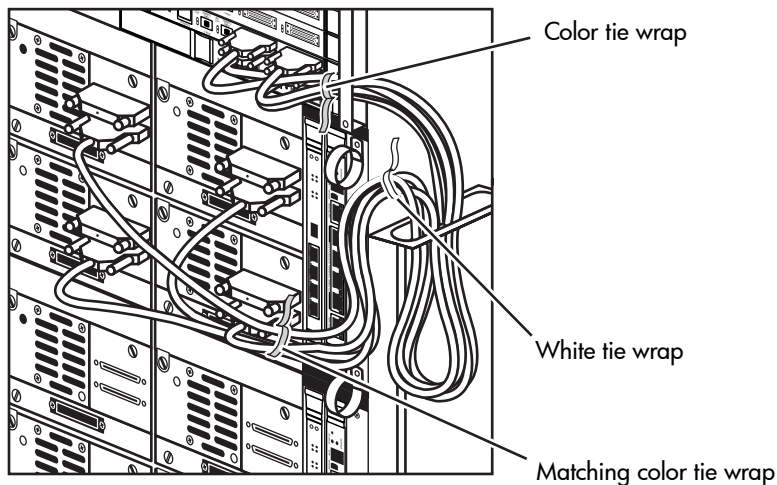


Figure 47: Attaching the tie wraps

Note: Ensure that different colors of tie wraps are used for each drive cluster and e2400-160 interface controller combination. If you have multiple sets of the same color, do not use them within the same library. Colors help identify which SCSI cables are associated with which cluster.

- a. Take one colored tie wrap and use it to group the cluster's SCSI cables together on the SCSI port end of the tape drives. Attach it between the cluster cable clamp and the SCSI ports.
- b. Take the second tie wrap of the same color and use it to group the cluster's SCSI cables together nearest to the SCSI port end of the e2400-160 interface controllers. Attach it between the cluster cable restraint bracket and the SCSI ports.
- c. Take one white tie wrap and use it to group the cluster's SCSI cables together near the cable access holes in the sheet metal on the right of the library cabinet.

Note: The other white tie wraps are provided as spares.

6. Route the SCSI cables through the cluster cable clamp on the lower right corner of the cluster frame (see [Figure 48](#)).

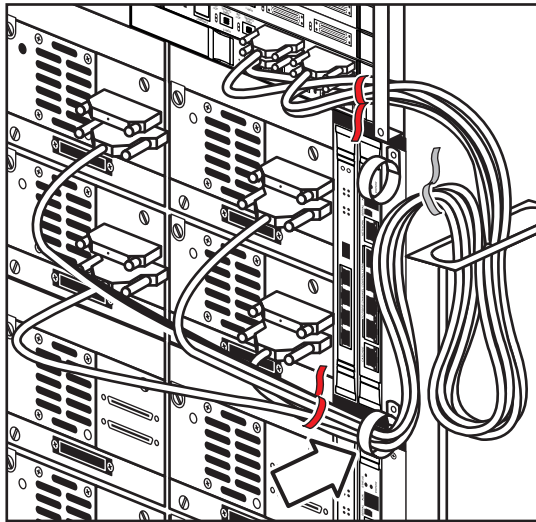


Figure 48: Routing through the cluster cable clamp

- a. Using a #2 Phillips screwdriver, remove the screw from the clamp.
 - b. Route the SCSI cables through the clamp.
 - c. Secure the clamp to the cluster frame by replacing the screw.
7. Repeat [step 1](#) through [step 6](#) for each interface controller and drive cluster combination installed in the library.

Connecting FC cable(s) to the Ultrium 460-FC drive

Note: Each e2400-FC 2G interface controller card ships with four FC cables, one Ethernet cable, and a cable bracket and clamp. These parts will be needed for the following procedures.

Note: A step stool may be needed to reach the e2400-FC 2G interface controllers in the card cage located at the top of the library cabinet.

1. If your library has only e2400-FC 2G interface controllers (no e2400-160 interface controllers), replace the existing cable restraint bracket with the new FC cable restraint bracket.
 - a. Remove the top and bottom screws from the cable restraint bracket and remove the bracket from the library (see [Figure 49](#)).

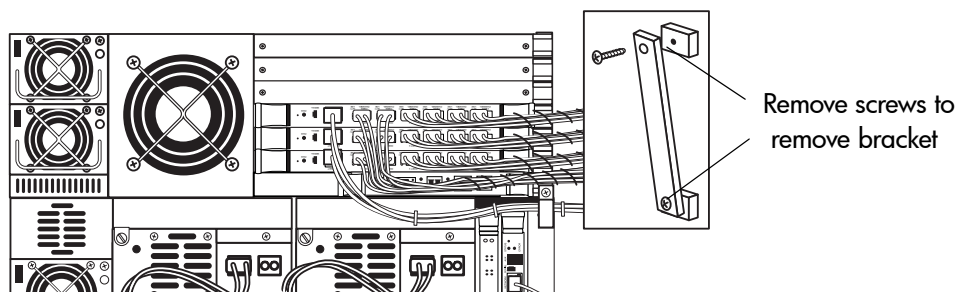


Figure 49: Removing the existing cable restraint bracket

- b. Position the cable restraint bracket provided with the e2400-FC 2G interface controller on the card cage where the previous cable restraint bracket was located (see [Figure 50](#)).

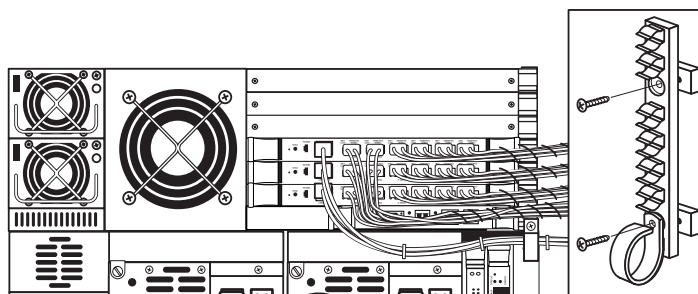


Figure 50: Installing the FC cable restraint bracket

Ensure that the bracket is positioned so that the screw holes in the bracket align with the holes in the card cage.

- c. Using one of the screws provided, secure the top hole of the bracket to the library card cage.

- d. Position the cable clip so that the screw hole is aligned with the lower screw hole on the cable bracket.
- e. Using the remaining screw, secure the cable clip and the cable bracket to the library card cage.

Note: FC cables are labeled near their connectors to indicate which TD port to connect to each drive. Plan to first connect the FC cables to the interface controller, then route them through the cabinet, and finally, connect them to the drive.

2. Connect all four TD cables to the TD ports on the interface controller (see [Figure 51](#)). For each, use the cable appropriately labeled for the port, identified as TD0, TD 1, TD2, or TD3.

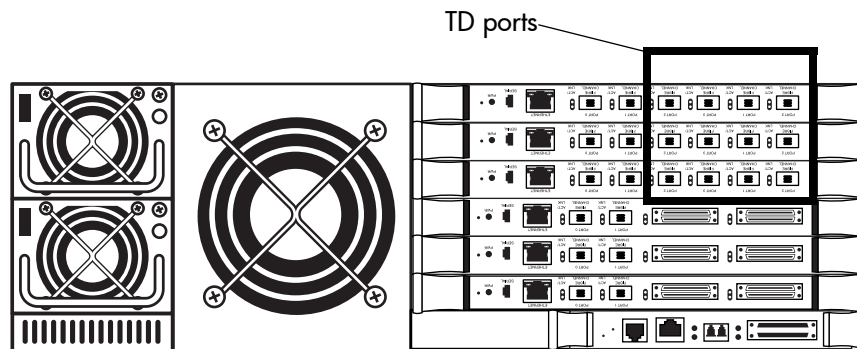


Figure 51: Connect the TD cables to the TD ports on the interface controller

3. Insert the FC cable bundle into the cable bracket to the right of the card cage.
4. Route the cable through the cable access holes in the sheet metal on the right of the library cabinet.
 - For drive clusters 0 through 2, dip the excess cable length down into the upper cable access hole.
 - For drive clusters 3 through 5, route the cables up through the lower and upper access holes.
 - Push the first set of cables to the back of the library to create space for additional cables. This will help prevent the cables from becoming tangled.

5. Using a #2 Phillips screwdriver, remove the screw from the clamp located on the lower right side of the drive cluster.
6. Route the FC cable bundle through this clamp.
7. Secure the clamp to the cluster frame by replacing the screw.
8. Remove FC port A end caps from each drive that is present.
9. For each drive, attach the FC cables to port A only.
Use the cable appropriately labeled as A, B, C, or D for the corresponding drive.
10. Insert the FC cable into the cable clip for the drive (see [Figure 52](#)).

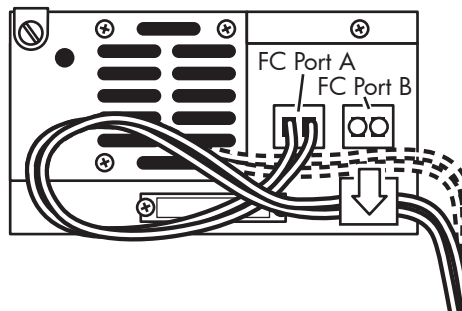


Figure 52: Inserting the FC cable in the drive cable clip



Caution: To avoid damaging the FC cable, do not pinch or sharply bend the cable. Allow a radial bend when attaching the FC cable to the cable clip.

11. Gather the FC cables for all drives near the drive handle on the lower right drive in the cluster, and attach the cables to the drive handle using the tie wrap provided.
This will help keep the FC cables clear of the drive cluster below.

Connecting drive cluster Ethernet cable(s)

1. Connect an Ethernet cable to the cluster controller card at port “E3”.
2. Route the cable through the cable access holes on the right side of the library.
3. Connect the cable to the Ethernet port on the corresponding interface controller (see [Figure 53](#)). For example, connect the cluster controller card in drive cluster 0 to the interface controller in slot 0 of the card cage.

Note: Refer to [Table 2](#) and [Table 3](#) on page 50 for an overview of drive cluster Ethernet cabling.

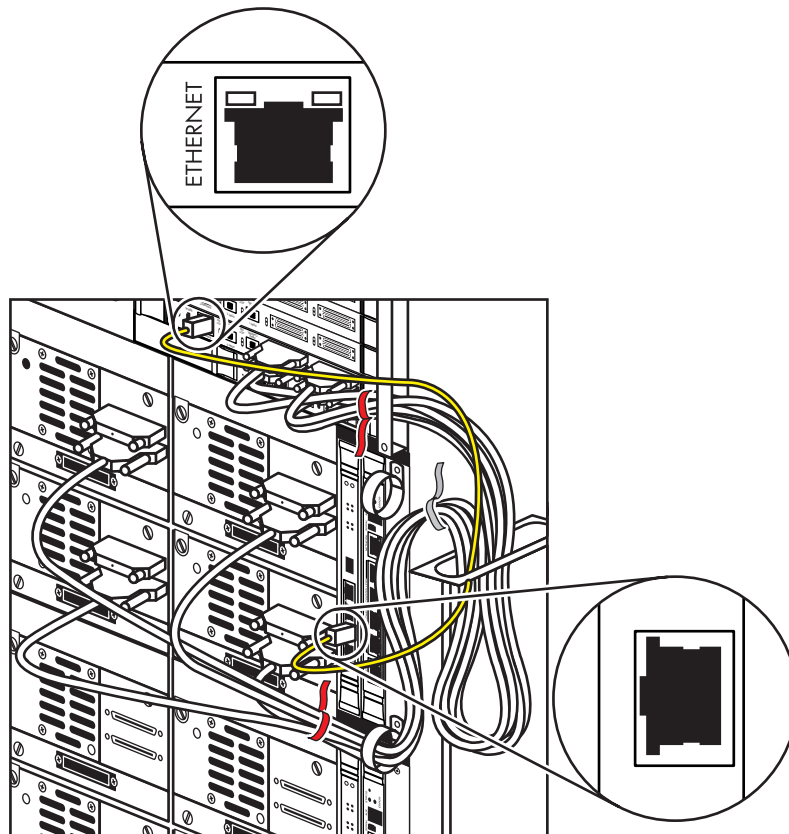


Figure 53: Connecting Ethernet cable to the e2400-160 interface controller

Note: If necessary, loop the cable and bind it with a spare white tie wrap in the cable channel to help take up any slack.

4. Repeat [step 1](#) through [step 3](#) for each drive cluster and interface controller combination.
5. Route the Ethernet cables through the cable clamp.
 - If you have SCSI drive cables, open the cable clamp located on the upper right side of the top drive cluster by removing the screw. Route the Ethernet cables through the cable clamp, and then reattach the screw to secure it to the card cage (see [Figure 54](#)).

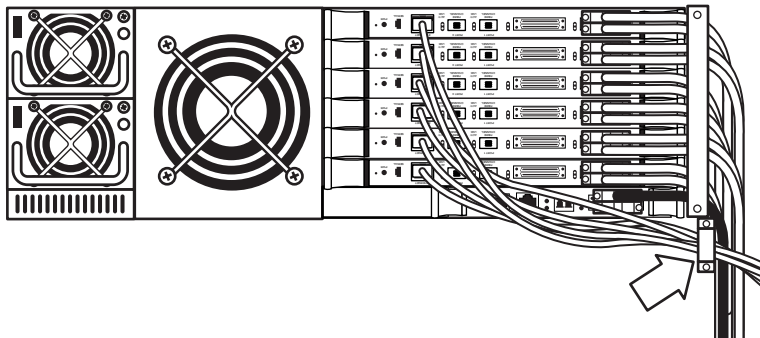


Figure 54: Routing Ethernet cables through the SCSI (and FC) cable clamp

- If you have FC drive cables only (no SCSI drive cables), open the cable clamp located at the base of the cable bracket on the right of the card cage by removing the screw (see [Figure 55](#)). Route the Ethernet cables through the cable clamp, then reattach the screw to secure it and the cable bracket to the card cage.

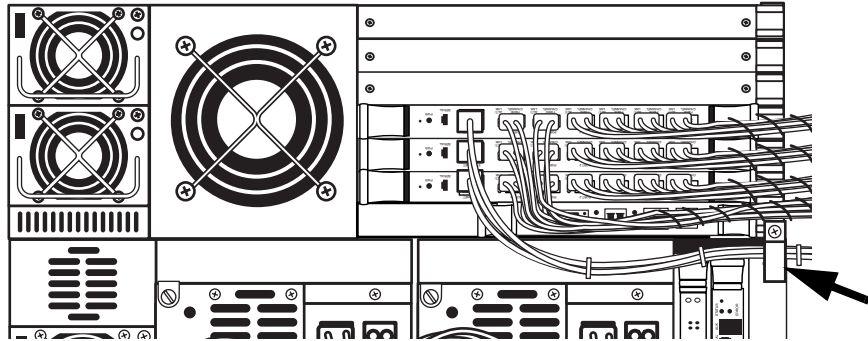


Figure 55: Routing Ethernet cables through the FC-only cable clamp

Connecting FC cables for HBA

1. Connect two FC cables (not provided) from the interface controllers, through an access hole in the library cabinet, and to a switch or Host Bus Adapter (HBA) (see [Figure 56](#)).
 - a. Attach a FC cable (one per every two drives) to the FC0 and FC1 ports on the interface controller. If you are only attaching one cable, attach it to port FC0.
 - b. Attach another FC cable to the e1200-160 robotics controller card located below the interface controller(s) in the card cage.
 - c. Route the cable(s) through access holes on the top or bottom of the library cabinet.
 - If routing through the top of the cabinet, use a Phillips screwdriver to remove the plate covering the top access hole.
 - If routing through the bottom of the library cabinet, route the cable(s) down the left side of the library next to the power cables.
 - d. Route the FC cable(s) to a switch or an HBA.

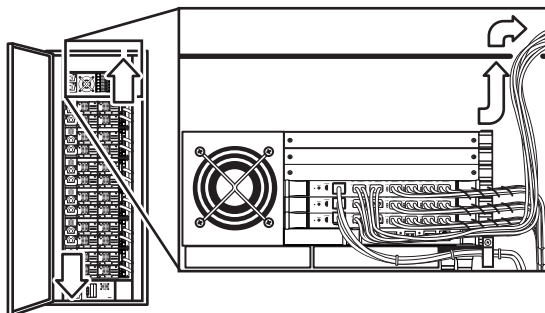


Figure 56: Connecting FC cables

Note: You can connect directly to an HBA or to a switch. The default is to connect to a switch. For detailed procedures for connecting to an HBA, please refer to *HP StorageWorks Interface Manager and Command View ESL User Guide*.

Connecting the cabinet controller LAN cable

1. Route your LAN Ethernet cable up through the bottom of the library cabinet through the cable access hole on the right side as you face the back of the library.
2. Attach the cable to the front Ethernet port on the cabinet controller located at the base of the library. The ports are on the right side toward the back of the cabinet controller (see [Figure 57](#)).

Note: There are two Ethernet ports on the right side of the cabinet controller. One port is for the cable that routes to the service port behind the laptop tray on the front of the library. This cable is factory installed. The second port should be vacant and is available for connecting to your local network.

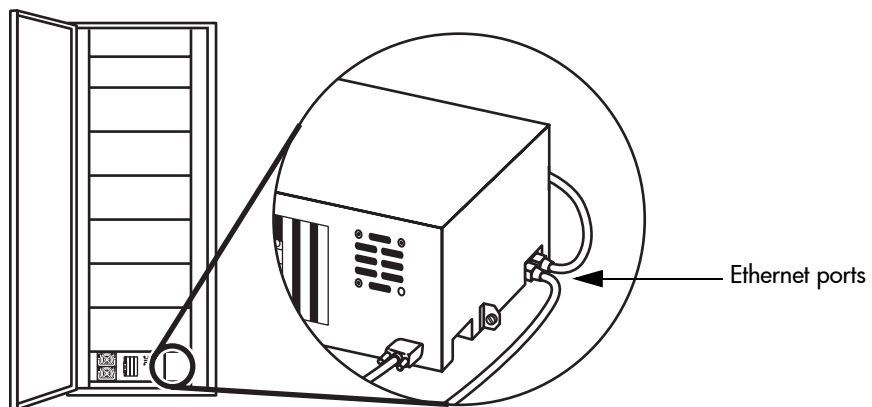


Figure 57: Connecting the cabinet controller LAN cable

Powering on the library

You are now ready to power on the library and ensure that all components are functioning properly (see [Figure 58](#)).

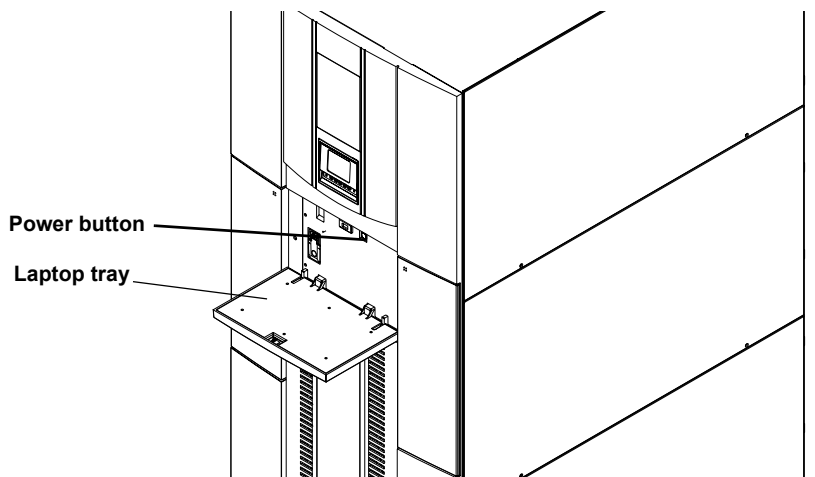


Figure 58: Powering on the library

Note: Normally, all library doors should be closed before powering on the library; however, to confirm that all components are functioning properly after the initial installation, leave the back library door open.

1. Power on all components of the library
2. Power on the library by moving the main switches on the power distribution unit to the on (right) position.
3. Press the power button located behind the laptop tray on the front of the library.
4. After several minutes, verify that the current state of the library appears in the System State display on the front panel (“System On-line” or “System Off-Line”).
5. Make sure that LEDs on the power supplies, tape drives, terminators, the interface manager card, and controllers indicate a normal (green) state.
6. Close the library’s back door and continue to [“Loading Tape Cartridges”](#) in the next chapter.

Loading Tape Cartridges

3

Before configuring the library you need to load the appropriate tape cartridges (Ultrium 460 or SDLT 320).

This chapter includes the following sections:

- [Preparing tape cartridges](#), page 80
- [Library storage locations and slot numbering](#), page 87

Note: Tape cartridges and cleaning cartridges must be ordered specifically. They are not included in the purchase of an ESL E-series Tape Library.

Preparing tape cartridges



Caution: Handle tape cartridges with care. Do not drop or mishandle them, or place them near sources of electromagnetic interference. Rough handling can damage the cartridge, making it unusable and potentially hazardous to the tape drives.

Labeling tape cartridges



Caution: The misuse and misunderstanding of bar code technology can result in backup and restore failures. To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, refer to the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from <http://www.hp.com/support>.

Note: For information on ordering tape cartridges and bar code labels, refer to the ordering sheet that shipped with your library.

Attaching a bar code label to each tape cartridge enables the library and application software to identify the cartridge quickly, thereby speeding up inventory time. Make it a practice to use bar code labels on your tape cartridges. Your host software may need to keep track of the following information and the associated bar code:

- Date of format or initialization
- Tape's media pool
- Data residing on the tape
- Age of the backup
- Errors encountered while using the tape (to determine if the tape is faulty)

Ultrium bar code labels

Ultrium cartridges have a recessed area located on the face of the cartridge next to the write-protect switch. Use this area for attaching the adhesive-backed bar code label (see [Figure 59](#)). Do not apply labels onto the cartridge except in this designated area.



Caution: The bar code label should be applied as shown in [Figure 59](#) with the alphanumeric portion facing the hub side of the cartridge. Never apply multiple labels onto a cartridge, because extra labels can cause the cartridge to jam inside a tape drive.

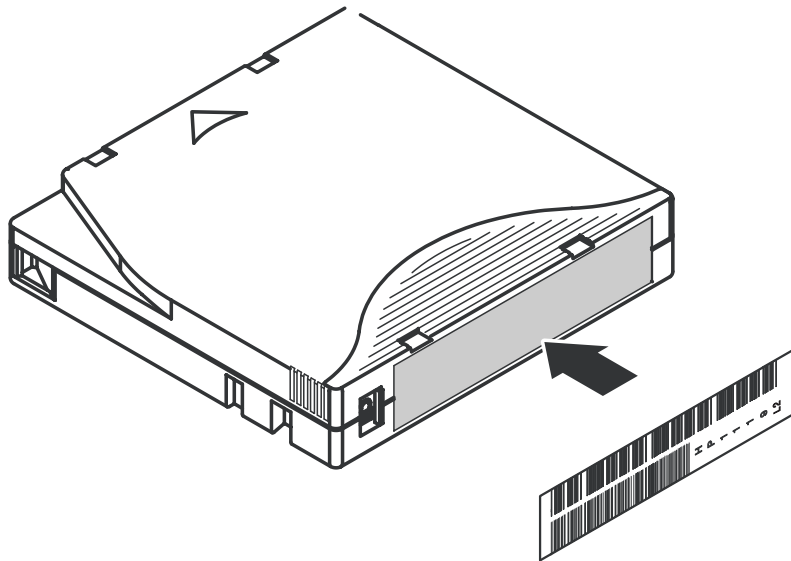


Figure 59: Attaching an Ultrium bar code label

For successful operation of your tape library, place the bar code label *entirely* within the recessed area, ensuring that no part of the label is outside of it (see [Figure 60](#)).

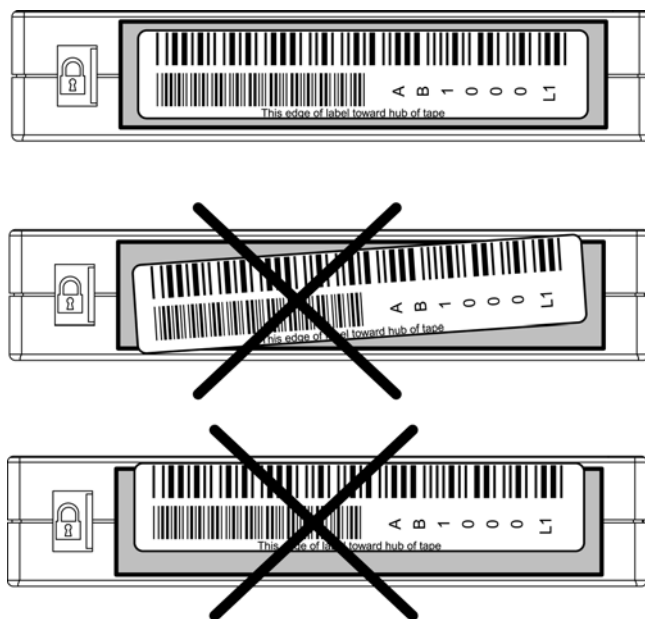


Figure 60: Proper Ultrium bar code label placement

SDLT bar code labels

SDLT cartridges have a front slide slot located on the face of the cartridge next to the write-protect switch (see [Figure 61](#)). Use this slot for inserting the bar code label by sliding it into the slot.



Caution: Do not apply labels onto the top, bottom, sides, or back of the cartridge as this may cause damage to the tape drive, or interfere with reliable operation.

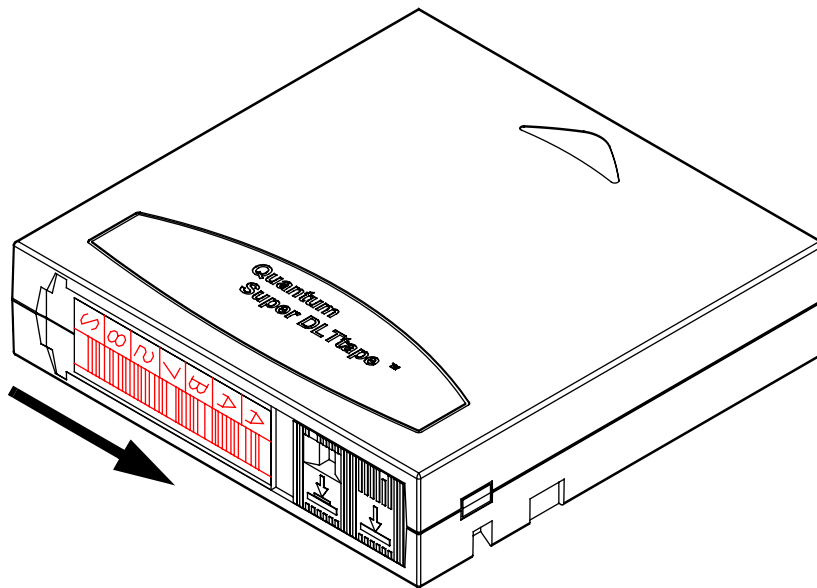


Figure 61: Inserting an SDLT bar code label

Media label identifiers

Be sure to use the proper bar code labels for your drive technology. [Table 4](#) lists the identifier that is found at the end of 7- or 8-character SDLT and Ultrium bar code labels.



Caution: To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, refer to the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from <http://www.hp.com/support>.

Table 4: Media label identifiers

Cartridge Type	Density	Label Identifier
SDLT	110/220 GB	S or S1
SDLT	160/320 GB	S or S2
Ultrium 230	100/200 GB	L1
Ultrium 460	200/400GB	L2

Setting the write-protect switch

Each tape cartridge has a sliding write-protect switch. This switch determines whether new data can be written to the tape cartridge (write-enabled) or whether data on the tape cartridge is protected from being erased or overwritten (write-protected).

Write-protecting Ultrium tape cartridges

By moving the switch to the left (Figure 62), the tape cartridge is write-enabled. By moving the switch to the right, the tape cartridge is write-protected.

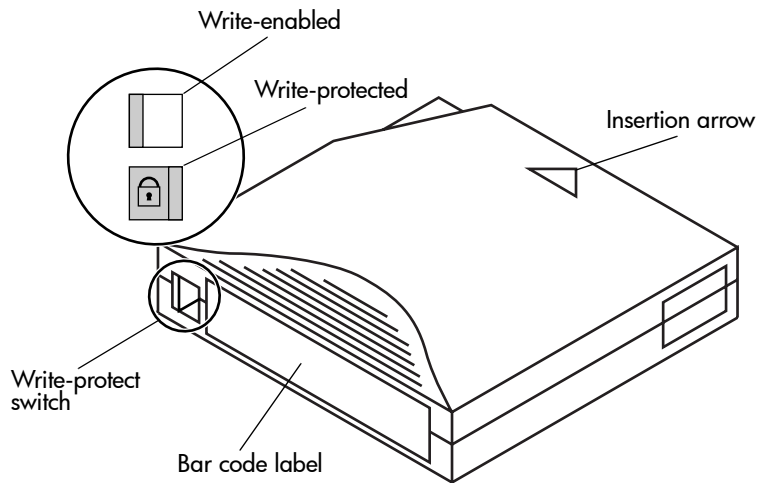


Figure 62: Write-protecting Ultrium tape cartridges

Write-protecting SDLT tape cartridges

By moving the switch to the left (Figure 63), the tape cartridge is write-protected (orange indicator is visible). By moving the switch to the right, the tape cartridge is write-enabled (orange indicator is not visible).

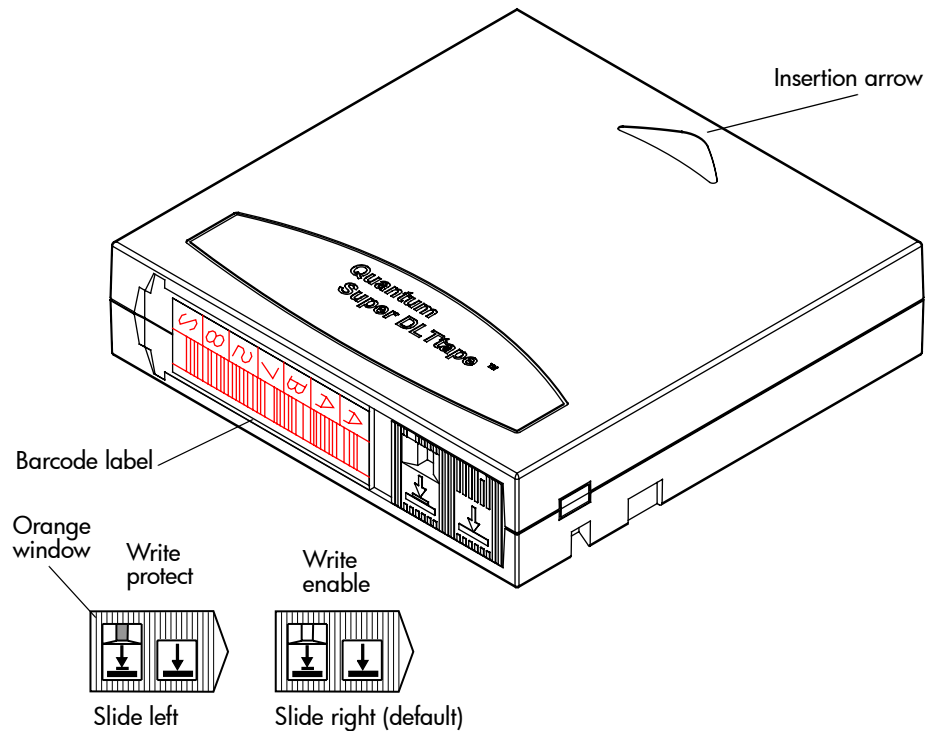


Figure 63: Write-protecting SDLT tape cartridges

Library storage locations and slot numbering

The HP StorageWorks ESL E-Series tape library is an automated tape storage and retrieval library that may consist of up to 24 tape drives and up to 718 Ultrium 460 tape cartridges, or 636 SDLT 320 tape cartridges.

The library stores tape cartridges in the following locations:

- Left panels
- Right panels
- Back panels

Note: The number of tape cartridge slots depends on the drive technology used. The number of back panel slots depends on how many drive clusters are in the library. See “[Model 712e](#)” on page 91 and “[Model 630e](#)” on page 92 for tape cartridge quantity information. Also, designating the load ports as active reduces the capacity by the number of slots in the load port.

To slide the slot panels out of the cabinet, press the slot panel latches down and pull the slot panel out of the cabinet (see [Figure 64](#) and [Figure 65](#)).

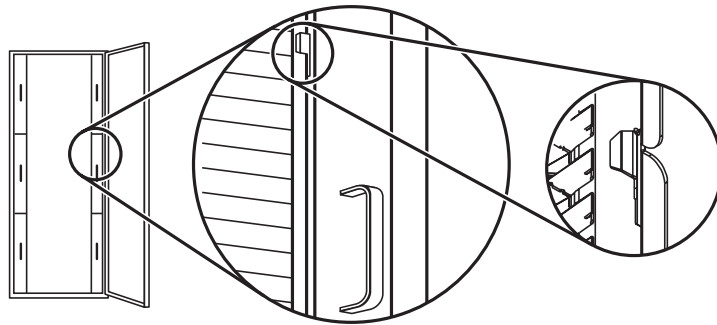


Figure 64: Releasing the slot panel latch on a middle load port

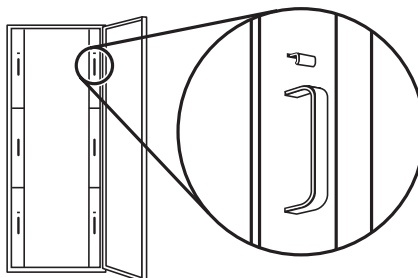
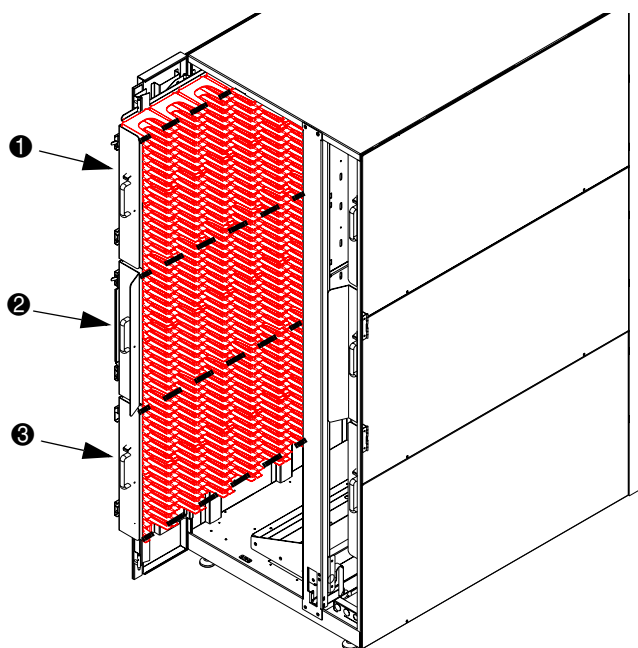


Figure 65: Releasing the slot panel latch on an upper or lower load port

[Figure 66](#) shows the left panel bins. Begin with panel 1 and load top to bottom and left to right. Continue with panel 2 in the same manner, and finally, panel 3.



- ❶ Panel 1
- ❷ Panel 2

❸ Panel 3

Figure 66: Bin shelf numbering, left panels

Figure 67 shows the right panel bins. Begin with panel 4 and load top to bottom and left to right. Continue with panel 5 in the same manner, and finally, panel 6.

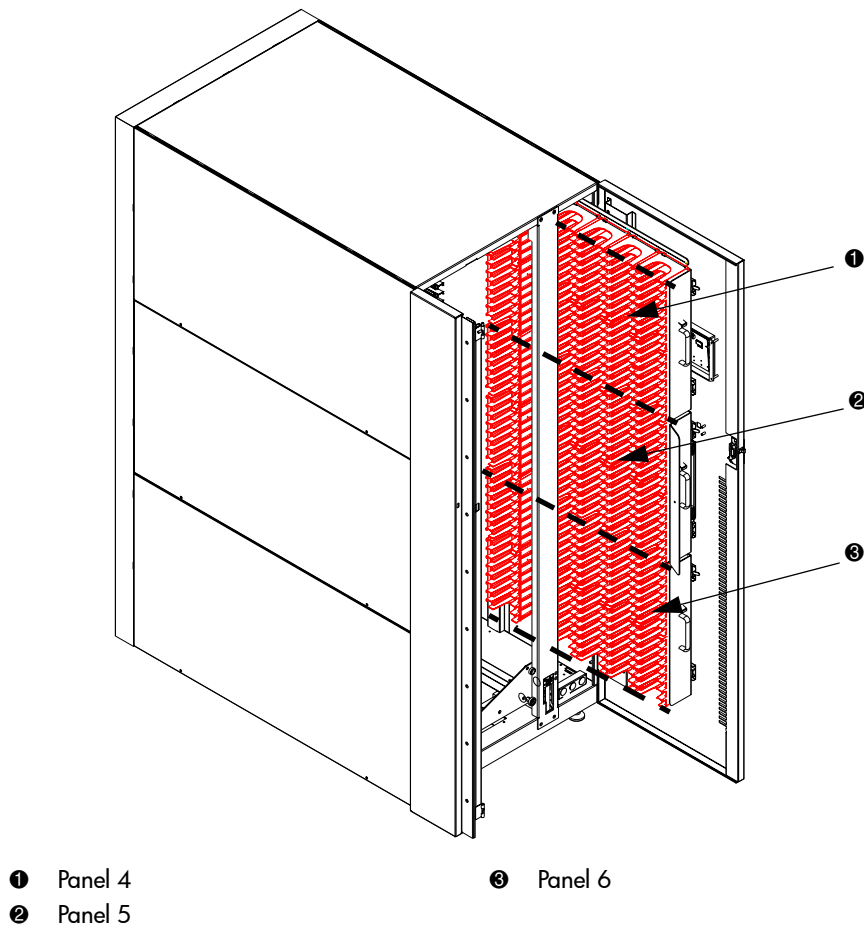


Figure 67: Bin shelf numbering, right panels

Figure 68 shows the back panel bins. With Ultrium 460 drives, each column has seven slots; with SDLT drives, each column has six slots. Begin at the top, with the panel corresponding to cluster 0, and load top to bottom and left to right. Continue loading each sequential cluster, top to bottom and left to right.

Note: The number of slots located in the back panel varies with the number of drive clusters installed.

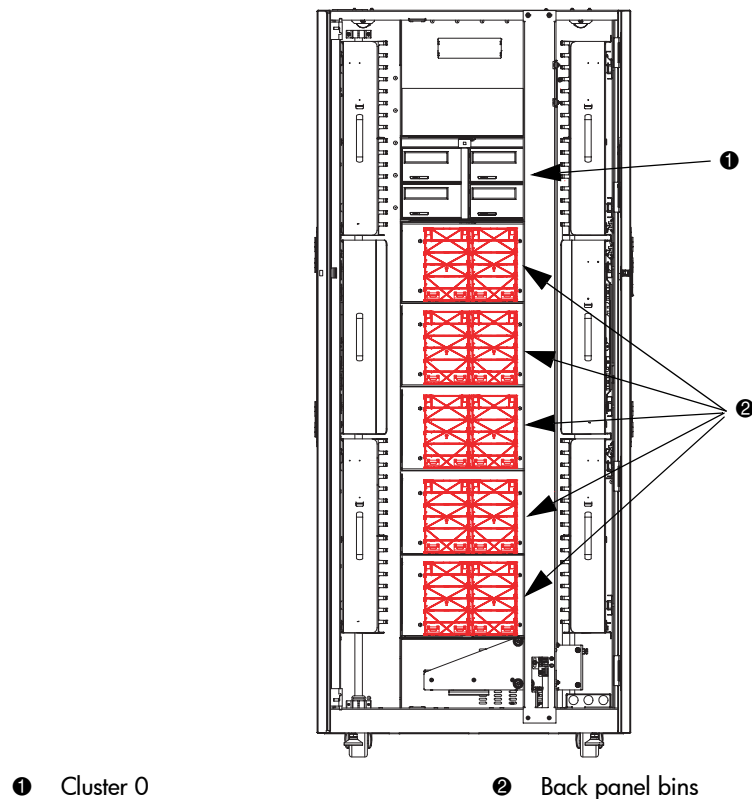


Figure 68: Bin shelf numbering, back panel (SDLT shown)

Model 712e

Storage capacity in Ultrium libraries is as shown in [Table 5](#).

Table 5: Ultrium library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	718
1 - 4	Left only	18	700
1 - 4	Right only	36	682
1 - 4	Both	54	664
5 - 8	0	0	704
5 - 8	Left only	18	686
5 - 8	Right only	36	668
5 - 8	Both	54	650
9 - 12	0	0	690
9 - 12	Left only	18	672
9 - 12	Right only	36	654
9 - 12	Both	54	636
13 - 16	0	0	676
13 - 16	Left only	18	658
13 - 16	Right only	36	640
13 - 16	Both	54	622
17 - 20	0	0	662
17 - 20	Left only	18	644
17 - 20	Right only	36	626
17 - 20	Both	54	608
21 - 24	0	0	648
21 - 24	Left only	18	630
21 - 24	Right only	36	612
21 - 24	Both	54	594

Model 630e

Storage capacity in the SDLT library is as shown in [Table 6](#).

Table 6: SDLT library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	636
1 - 4	Left only	16	620
1 - 4	Right only	32	604
1 - 4	Both	48	588
5 - 8	0	0	624
5 - 8	Left only	16	608
5 - 8	Right only	32	592
5 - 8	Both	48	576
9 - 12	0	0	612
9 - 12	Left only	16	596
9 - 12	Right only	32	580
9 - 12	Both	48	564
13 - 16	0	0	600
13 - 16	Left only	16	584
13 - 16	Right only	32	568
13 - 16	Both	48	552
17 - 20	0	0	588
17 - 20	Left only	16	572
17 - 20	Right only	32	556
17 - 20	Both	48	540
21 - 24	0	0	576
21 - 24	Left only	16	560
21 - 24	Right only	32	544
21 - 24	Both	48	528

Note: If the load ports are configured, those slots cannot be used as data slots.

Configuring the Library

4

This chapter includes the following sections:

- [Configuring tape drives](#), page 94
- [Configuring the IP address](#), page 96
- [Installing and configuring Command View ESL](#), page 100

Configuring tape drives

If you have a partially filled drive cluster (less than four drives):

1. Take the library off-line.
 - a. Press the **Ops** button on the Operator Control Panel (OCP) to access the Operations screen.
 - b. Select Cabinet.
 - c. Use the up and down arrows to take the library off-line.
2. Select the **Setup** button from the Menu screen on the OCP.
3. When prompted, enter the 6 digit password.

Note: The default password is 001122.

4. Use the **Down** button to move to Configured Drives.

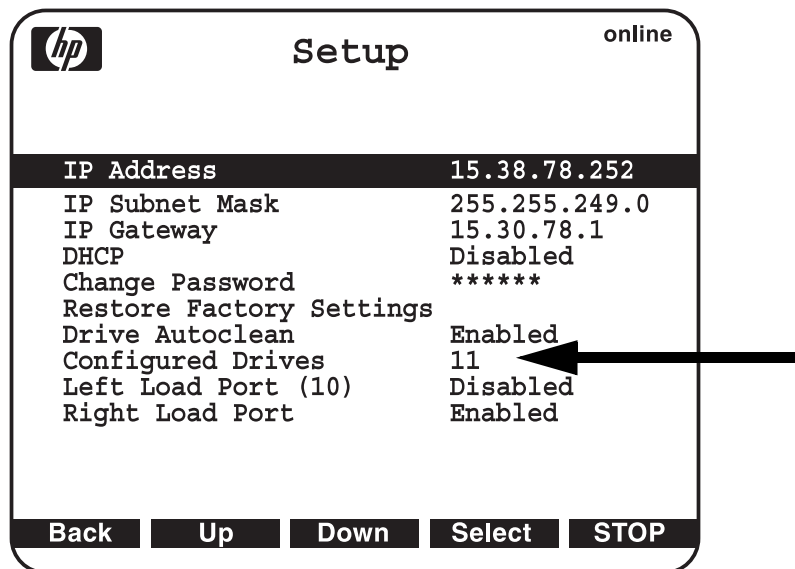


Figure 69: Setting up configured drives

5. Press the **Select** button to select Configured Drives.

6. Use the **Down** button to change the drive count to the number of installed drives in the library. The default is 24.
7. Press the **Select** button to save your changes.
8. A message appears notifying you that the library must be rebooted for this change to take effect. Select OK.
9. To reboot the library:
 - a. From the Main screen select the **Ops** button.
 - b. Press the **Select** button to select Cabinet.
 - c. Use the **Up** or **Down** button to change the setting from Offline to Reboot.
 - d. Press the **Select** button.
 - e. A confirmation screen appears. Select Yes. The library will reboot.

Configuring the IP address

1. Make sure the library is powered up. If not:
 - a. Press the power button located behind the laptop tray on the front of the library (see [Figure 70](#)).
 - b. After several minutes, verify that the current state of the library appears in the System State display on the front panel (“System On-line” or “System Off-Line”).

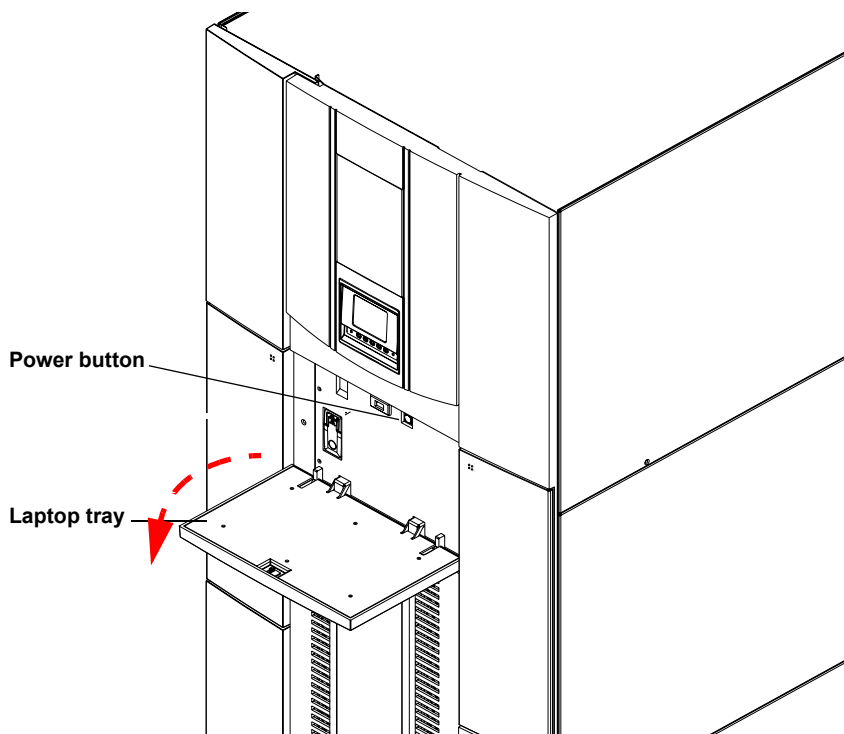


Figure 70: Powering up the library

2. Take the library off-line, if it is not off-line already.
 - a. Press the **Ops** button on the OCP to access the Operations screen.
 - b. Select Cabinet.
 - c. Use the up and down arrows to take the library off-line.

3. When the library completes the boot up sequence and the OCP is active, press Menu from the Home screen.

The OCP displays the Menu screen (see [Figure 71](#)).

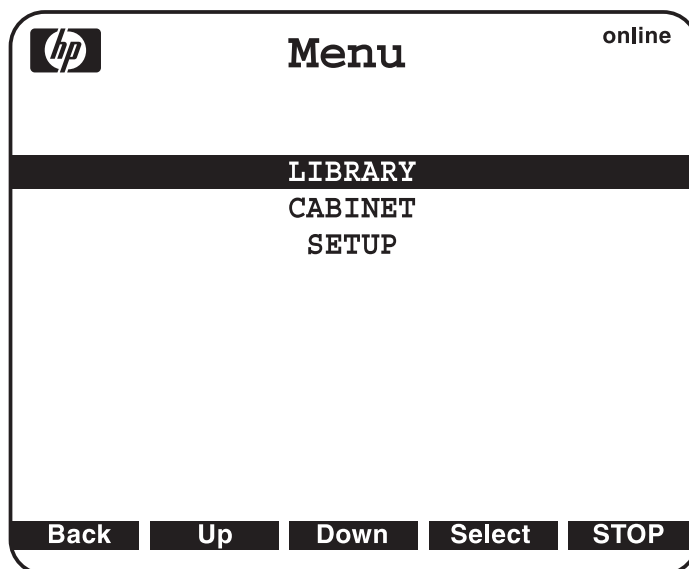
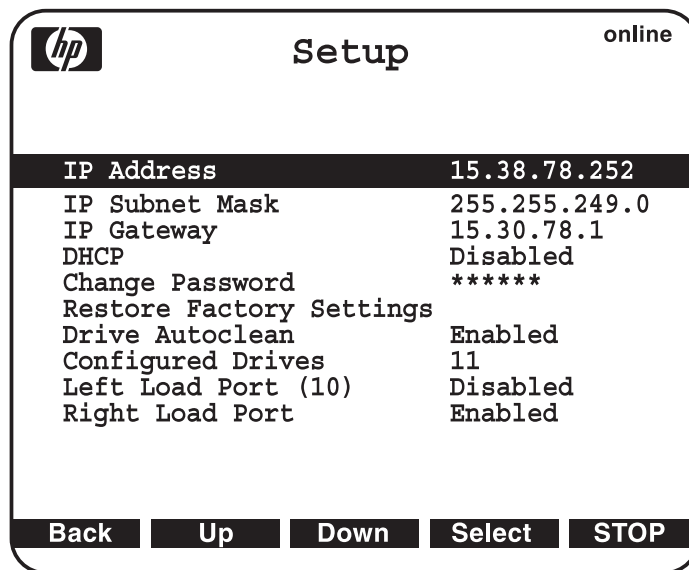


Figure 71: Menu screen

4. From the Menu screen, use the up and down arrows to highlight Setup and press **Select**.
5. The library prompts you for a password. Enter the 6 digit password.

Note: The default password is 001122.

The Setup screen displays (see [Figure 72](#)).



The Setup screen displays the HP logo, the word "Setup", and the status "online". Below this is a list of configuration options and their current values. At the bottom are five buttons: Back, Up, Down, Select, and STOP.

Option	Value
IP Address	15.38.78.252
IP Subnet Mask	255.255.249.0
IP Gateway	15.30.78.1
DHCP	Disabled
Change Password	*****
Restore Factory Settings	
Drive Autoclean	Enabled
Configured Drives	11
Left Load Port (10)	Disabled
Right Load Port	Enabled

Back Up Down Select STOP

Figure 72: Setup screen

The Setup screen displays the following information:

- IP Address
- IP Subnet Mask
- IP Gateway
- DHCP (default enabled)
- Change Password
- Drive Autoclean
- Left Load Port (##)
- Right Load Port (##)

Note: Load port slot numbers will be different for each drive technology (Ultrium is 18 and 36, and SDLT is 16 and 32).

6. To edit the setup information, use the up and down arrows to highlight the section and press **Select**.
 - To set the IP address, subnet mask, and gateway, use the up and down arrows to select the appropriate number and press **Select** to accept.
 - To enable/disable DHCP, use the up and down arrows to toggle between enable/disable. Press **Select** to accept the setting. If your library is not connected to a network which uses a DHCP server to assign IP addresses, disable this function.
 - To change the password, use the up and down arrows to select Change Password and press **Select**. To change the password, enter a 6-digit password using the numbers provided on the OCP. Press **Select** to accept the new password. When prompted, re-enter the password to confirm.
 - To enable Autoclean, use the up and down arrows to select Autoclean and press **Select**.
 - To enable load ports, use the up and down arrows to select the desired load port and press **Select**.
7. When you are finished viewing/editing the setup information, press **Back** to return to the Menu screen.

Installing and configuring Command View ESL

Command View ESL provides a browser-based graphical user interface (GUI) for remote management and monitoring of your Interface Manager card through a LAN. Command View ESL is the preferred user interface for controlling the Interface Manager card. In conjunction with the Interface Manager card, Command View ESL provides the following:

- Configuration and management of the Interface Manager card and FC interface controllers
- Monitoring and management of key library components
- Hardware inventory and identity information
- Status information for connected hardware
- Error reporting and comprehensive error logs
- Firmware management
- License management

Command View ESL is installed on the management station and communicates with the Interface Manager card through the LAN. The management station processes information from the Interface Manager card and “serves up” the Command View ESL GUI. Users can access Command View ESL either from the management station directly or through any client on the LAN by using a browser-based GUI interface. Multiple Command View ESL GUI clients can be open simultaneously across the LAN, and multiple ESL E-Series tape libraries can be managed through the Command View ESL software.

Prerequisites

For the server side, Command View ESL requires a management station (server) with a minimum of:

- Pentium III 500-MHz, 256-MB RAM
- 10/100 Base-T network card

Note: A static IP address is recommended.

- Microsoft Windows 2000 Professional or Server edition SP3, Windows XP Professional

For the client side, Command View ESL requires the following:

- Microsoft Internet Explorer v6.0 SP1 or later, or Netscape Navigator v6.2 or later.

Note: Make sure that Java support is enabled in the browser.

- An internet connection for CommandView ESL to receive firmware and software release information automatically from the HP support website

Installing Command View ESL

To install Command View ESL software:

1. Insert the Command View ESL software CD into the CD-ROM drive on the management station.
2. If autorun is disabled on the CD-ROM drive, locate and double-click the *setup.exe* file on the CD.
3. Follow the instructions on the screen to complete the installation.
4. Reboot the management station.

Command View ESL is essentially a web server that serves up a GUI interface to web clients. The software runs on the management station as a service. By default, this service starts automatically when the management station is booted, and runs invisibly in the background. In most cases, the default installation settings are adequate.

If you need to stop Command View ESL from running, use the Services applet that is included with Windows. To access the Services applet, click **Start > Settings > Control Panel > Administrative Tools > Services**. Use the Services applet to start and stop services, and to set whether the service is started automatically when the computer is booted. Refer to the online help that comes with the Services applet for more information.

Starting Command View ESL

To start Command View ESL, open your browser, either on the management station or on a computer that is networked to the management station, and enter the following URL in the address field:

<http://<hostname>:4095/>

Note: *<hostname>* is the IP address or network name of the management station. If you are starting Command View ESL on the management station itself, you can substitute `localhost` for the hostname.

If the Java Runtime Environment (JRE) plugin is not already installed on your computer and you are using a Windows operating system, Command View ESL will attempt to download and install it for you. If you are prompted to install the JRE plugin, click **OK** and follow the instructions on the screen. If you are using a non-Windows operating system, you will be instructed how to download the JRE plugin. If the JRE plugin is not available, then Command View ESL will not run.

After the JRE is successfully installed, the Command View ESL Launcher screen displays.

Configuring Command View ESL

After installing Command View ESL, you must perform the following configuration steps using the software:

- Set the Command View ESL administrative password
- Verify proxy settings for the management station
- Add all libraries to Command View ESL that will be monitored
- Add the license key for Command View ESL and any additional features that you have purchased
- Configure properties for each library
- Configure host access (Secure Manager)

Note: For detailed installation and configuration instructions, as well as usage and licensing information, refer to the *HP StorageWorks Interface Manager and Command View ESL User Guide* that shipped with the library. For technical support, go to <http://www.hp.com/support/cvesl>.

Index

A

- accessory kit [28](#)
- audience [6](#)
- authorized reseller, HP [10](#)
- autoclean [98, 99](#)

B

- back panel [87](#)
- bar code [80, 82](#)
- bar code labels
 - SDLT [83](#)
 - Ultrium [81, 82](#)
- bolts, restraining [25](#)
- bracket, cable restraint [64, 70](#)

C

- cabinet controller [51](#)
- cable clamp [45, 62, 69, 74, 75](#)
- cable restraint bracket [64, 70](#)
- cables
 - cabinet controller [62](#)
 - FC [74, 75, 76](#)
 - I2C [48](#)
 - managing [66](#)
 - power [38, 47](#)
 - SCSI [62, 63, 65, 67, 69](#)
- card cage [60](#)
- cartridge slots [87](#)
- Command View ESL [100](#)
- configuring IP address [96](#)

- configuring the library [93](#)
- conventions
 - document [7](#)
 - equipment symbols [8](#)
 - text symbols [7](#)

D

- DHCP [98, 99](#)
- document
 - conventions [7](#)
 - related documentation [6](#)
- doors [29](#)
- drive clusters
 - daisy-chaining [53](#)
 - ethernet cables [73](#)
 - installing cables [47](#)
 - numbering [54](#)
- drive numbering [54, 55](#)

E

- environmental conditions [15](#)
- equipment symbols [8](#)
- error logs [100](#)
- ESD [17](#)
- ethernet cables
 - cabinet controller [51, 77](#)
 - drive cluster [49, 73](#)
 - interface manager [51](#)
 - LAN [77](#)
 - robotics controller [52](#)

F

FC cables [74, 75, 76](#)
FC interface controllers [59, 100](#)
feet, leveling [26, 28](#)
firmware [100](#)
floor
 clearance [14](#)
 inclination [14](#)
 space [13, 19](#)
 strength [14](#)
front panel [97](#)

G

gateway, IP [99](#)
getting help [10](#)

H

help, obtaining [10](#)
HP
 authorized reseller [10](#)
 storage website [10](#)
 technical support [10](#)

I

I2C cable [48](#)
installation
 preparing [16](#)
 tools [16](#)
installation location [12, 27](#)
installing
 Command View ESL [100](#)
 drive cluster cables [47](#)
 drive cluster ethernet cables [49](#)
 FC interface controller [59](#)
 I2C cable [48](#)
 power cables [47](#)
 tape drives [54](#)
interface controllers [59, 100](#)
interface manager [51, 100](#)
inventory [100](#)

IP

address [98, 99](#)
address, configuring [96](#)
gateway [98, 99](#)
subnet mask [98, 99](#)

L

labeling tapes [80](#)
LAN cable [77](#)
laptop tray [27, 29](#)
left panel [87](#)
leveling feet [26, 28](#)
licensing [100](#)
load port [98, 99](#)
load slots [87](#)
loading tapes [79](#)

M

media label identifiers [84](#)
menu [97](#)
Model 630e [92](#)
Model 712e [91](#)

N

numbering
 clusters [54](#)
 drives [54, 55](#)

O

OCP [97](#)

P

pallet [23](#)
pallet ramp [24](#)
panel
 back [87](#)
 left [87](#)
 right [87](#)
 slots [87](#)
password [94, 97, 98, 99](#)

ports

- FC interface controller [65](#)
- interface manager card [51](#)
- robotics controller [52](#)

power

- cables [38](#), [47](#)
- cord [14](#)
- requirements [14](#)

R

- rack stability, warning [10](#)
- related documentation [6](#)
- remote management [100](#)
- requirements, power [14](#)
- restraining bolts [25](#)
- right panel [87](#)
- robotics controller [52](#), [62](#)

S

- SCSI cables [63](#), [65](#), [67](#), [69](#)
- SDLT [92](#)
- SDLT bar code labels [83](#)
- SDLT write-protecting [86](#)
- setup [97](#)
- slots [91](#)
 - card cage [60](#)
 - panel [87](#)
 - SDLT [92](#)
- storage elements [91](#), [92](#)
- subnet mask [99](#)
- symbols in text [7](#)
- symbols on equipment [8](#)
- system state [96](#)
- system status [100](#)

T

tape cartridges

- bar code labels [81](#), [83](#)
- labeling [80](#)
- loading [79](#)
- media label identifiers [84](#)
- preparing [80](#)
- write-protecting [85](#), [86](#)

tape drives, installing [54](#)technical support, HP [10](#)terminators [57](#), [58](#)text symbols [7](#)tie wraps [68](#)**U**Ultrium [91](#)Ultrium bar code labels [81](#), [82](#)Ultrium write-protecting [85](#)unpacking [11](#), [18](#)**W**wall outlet [14](#)

warning

- rack stability [10](#)
- symbols on equipment [8](#)

websites

- Command View ESL [103](#)
- HP storage [10](#)

weight [27](#)

write-protecting

- SDLT tapes [86](#)
- Ultrium tapes [85](#)

